

Mobile Radio Technology

The journal of mobile communications technology

Including The

★ **5th Annual** ★

BUYERS' GUIDE 1992

- Product Directory
- Services Directory
- Brand Names Directory
- Company Addresses
- Trade Associations
- FCC Offices

The new Midland FM Portables

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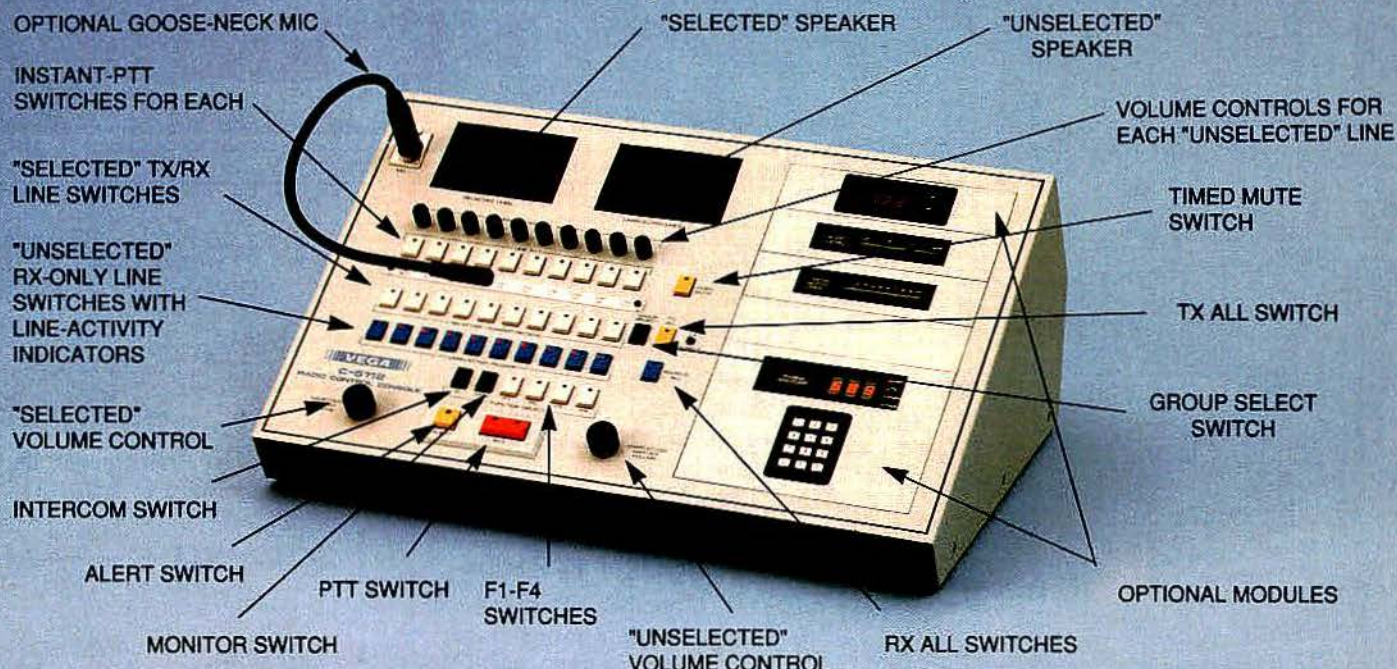
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- **GROUP SELECT** switch for easy selection of TX/RX line combinations

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features

10 1992 Buyers' Guide

MRT's fifth annual directory provides you essential information you will want to retain for quick reference year-round. Products and services are listed, as well as brand names, trade associations and FCC offices. You can find these sections as follows:

16 Product Directory

More than 100 categories of equipment are listed, as well as more than 750 suppliers. Advertisers in this issue are *listed in blue ink*.

56 Services Directory

Mobile radio services and companies that offer them are listed. Advertisers in this issue are *shown in blue ink*.

60 Company Addresses

An alphabetized index of suppliers and service providers appears in this section. Regional sales contacts are listed for advertisers in this issue.

110 Brand Names Directory

Sort out which brand names belong to specific mobile radio industry manufacturers in this alphabetized listing.

112 Trade Associations Directory

Addresses and phone numbers for various mobile radio trade groups are provided for quick reference.

113 FCC Offices Directory

A list of commission offices for reference.

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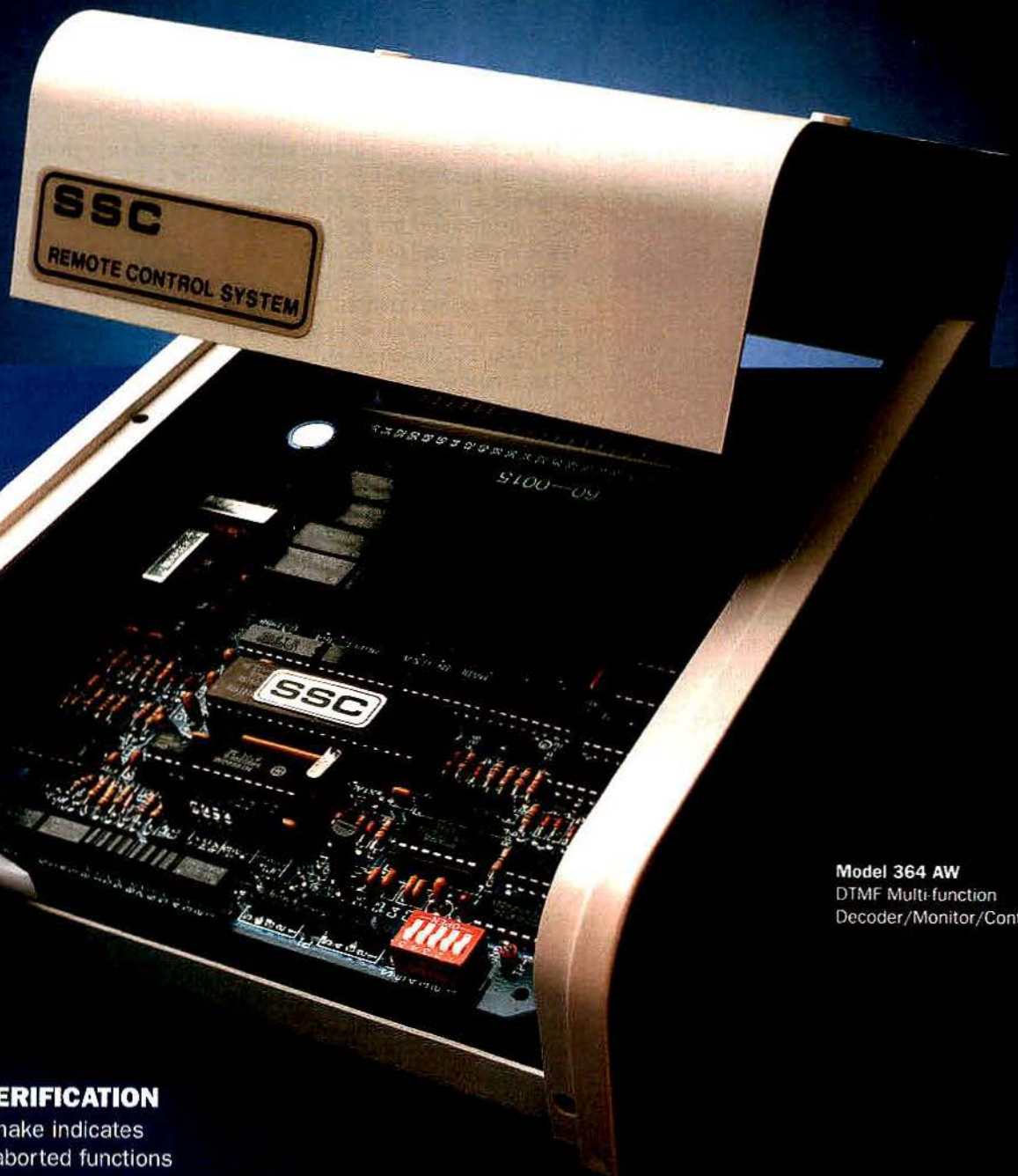
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On the cover: MRT's fifth annual Buyers' Guide serves as a year-round reference for buying in 1992. It includes product and service categories, listings and company addresses.

©1991 Mobile Radio Technology (ISSN 0745-7626) is published monthly for free to qualified individuals by Intertec Publishing Corporation, 9221 Quivira Road, Overland Park, KS 66215-3905. Second-class postage paid at Shawnee Mission, KS, and additional mailing offices. POSTMASTER: Send address change to MOBILE RADIO TECHNOLOGY, P.O. Box 12960, Overland Park, KS 66282-2960.

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Scanning . . .



No user fees

Federal regulators and legislators have played out a strange drama. The action involved a proposal for the FCC to charge user fees.

Embodied in a House appropriations bill, the \$65 million in fees would have been paid by broadcasters, common carriers and commercial two-way radio users. The fees were divided according to the FCC bureaus that administer these users:

- Mass Media Bureau—broadcasters.
- Common Carrier Bureau—cellular telephone and radiopaging system operators.
- Private Radio Bureau—business and industrial radio users and specialized mobile radio (SMR) system operators.

Instead of charging users by the amount of spectrum they use, the government formula was to charge users according to the budget set for the bureau that administers them.

According to this formula, fees would have been comparable for cellular system operators with 20MHz of spectrum, TV station licensees with 6MHz of spectrum and SMR system operators with 250kHz of spectrum.

In taking a position against the user fees, National Association of Business and Educational Radio (NABER) president E.B. "Jay" Kitchen said: "Our members are not against paying their fair share. But the distribution of fees has to be equitable. The fee schedule as proposed is not equitable."

At the same time, industry analysts questioned the figures cited by the FCC for its bureau operating budgets. Apparently, justification for the figures was slow in coming and not persuasive when it arrived.

A panel session arranged by NABER at an industry trade show in September in Orlando, FL, included staff members of the House Energy and Commerce Committee in which the House bill was prepared.

The staff members explained how the speaker of the House required that the fees the FCC collects must be linked to services the FCC renders. If a fee schedule derived by that formula is different from one derived by the actual amount of spectrum used, there was nothing the committee members could do about it.

Kitchen credited NABER members who wrote letters to key members of the House and Senate for explaining how harmful the fees would be to small businesses that need radio communications and how the fee schedule was inequitable, anti-competitive and financially burdensome. At the same time, the NABER staff was highly active on Capitol Hill, explaining its members' objections to the fee schedule.

The association president said that the prospects of defeating the fee schedule were dim virtually until the eleventh hour.

The House appropriations bill included the user fee schedule, but the Senate appropriations bill did not. Thus, the matter had to be resolved in the Appropriations Conference Committee. Senator Ernest Hollings (D-SC), who, along with Senator Daniel Inouye (D-HI), had been presented with a petition outlining land mobile radio users' reasons for opposing the fees, proposed funding for the FCC that did not include the fees.

On Tuesday, Oct. 1, the conference committee voted for a \$126.3 million FCC budget with no user fees. "We popped the cork on a champagne bottle when that vote was taken," Kitchen said.

We congratulate NABER, its members who wrote letters to their congressional representatives and senators and other land mobile radio users who

played an important role in what had to be a fast campaign to defend the radio communications industry interests.

* * *

Technician of the Year

NABER has begun an award program to recognize the contribution of the industry's technicians and to acknowledge the particular performance of an outstanding professional.

The association has appointed a committee to assess candidates for the Technician of the Year Award according to four criteria: customer satisfaction, performance, professionalism and teamwork.

The association's chairman of the board will present an inscribed plaque to the chosen recipient at the Annual Mobile Communications Conference in May 1992 in Washington, DC. The award winner will be given an all-expense-paid trip to the conference.

This award program has our enthusiastic support. Nomination forms can be obtained by calling 800-759-0300.

—Don Bishop

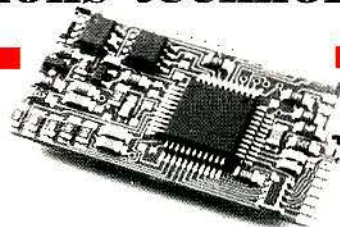
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Technician integrity:

As a technician and radio dealer, I would never allow the ability for frequency programming to an end-user, modify amateur radios to operate on commercial frequencies or place high-power radios on restricted-power frequencies. My integrity has cost me thousands of dollars and ill will because I know my clients have gone elsewhere for service I refused to offer.

I held my First Class FCC license sacred. Placing your license in peril kept you and your shop within the law. Communications interference and degradation of service can be attributed to deregulation. Fingers can be pointed only toward the FCC. What good is cost savings to the public if service is unacceptable?

Send FCC credentials and citation procedures to qualified people such as myself, and I guarantee an improvement in customer service, a swift swing to-

ward communications compliance and a tidy financial profit for the FCC.

Cameron Rolfe
EVS Communications
San Carlos, CA

Service tips:

The August 1991 article "Service Tips For Two-Way Portables" by Roald Steen was well done, although it was misleading in one area.

The author tells us to check the antenna, but he provides no conclusive way of doing so. Replacing an antenna because it may be suspect is mere shot-gunning, and replacing every bent or no-trouble-found radio antenna will get expensive for the customers and give your service shop a bad name in a hurry.

Portable radio antennas generally are damaged internally from a sharp impact that leaves no scars. A bent sheath usually indicates the antenna has

pressed against something for a long time. For example, an antenna might spend hours pressed against a car seat when a radio is worn on the hip by a person in a sitting position. A bent sheath does little more than upset the vertical polarization slightly, and portables usually are not held entirely vertical, anyway.

Invest in a low-current power supply with digital voltage and current meters. Place the radio under test on a battery service block and set it to rated RF output power with a test coaxial cable and a service monitor.

Unkey the transmitter, remove the test coax and attach the original antenna to the radio. Key the transmitter and record the current draw.

Unkey the transmitter, remove the original antenna and attach a similar antenna known to be in good condition. Key the transmitter and measure the current draw.

Mobile Radio Technology

The journal of mobile communications technology

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DID-50 Selector Level Interface

Eliminates over dialing mobile numbers on landline initiated calls.

SDI-50 Versatile Interconnect

Operates in simplex, half duplex, or full duplex systems. Local or remote programming. Includes often imitated remote base station operation, and repeater control feature. Uniquely adaptable to changing system requirements. Available with E&M signalling and four wire audio.

ACI-35 Audio Controlled Interconnect

VOX control with electronic voice delay assures smooth operation through repeater systems. Selective signalling, remote base operation, on-board programming keypad.



SSI-68 High Value Simplex Interconnect

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HDI-68 Half Duplex Interconnect

Designed for repeater applications, packs a lot of features for its low price. Remote programming, easy installation, smooth operation and high reliability.



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Circle (7) on Fast Fact Card

**Make The
RIGHT
Connection**

Letters to the editor

With most portables, a difference of more than 0.2A between the original and known good antennas indicates the original antenna is faulty.

Specialized mobile radio (SMR) trunked radios have a range of transmit frequencies. Key the radio under test several times to get an average current draw reading, or put the radio into test mode and check it on the same internal

test frequency.

A spectrum analyzer can be used to check portable antennas, although it is harder to detect a slightly degraded antenna with a spectrum analyzer. Using antenna substitution, check for a significant difference in spectrum analyzer peaks.

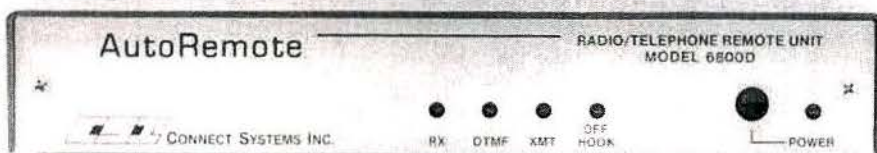
One more tip about portable radio service: Have you ever had a complaint

that your repeaters are noisy or full of static on windy days? If the system checks out to be working normally, tell your customers to have their outdoor workers shield the portable's microphone from the wind when they transmit. You'll be amazed at the reduction in noise and static.

Mike Mekelburg
Lead Technician

Confidential Communications Services
Flagstaff, AZ

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Fast Fact Card comments:

I like the technical articles with meat and real-time applications.

The most interesting article in the April issue is "Repeater Linking Solves Wide-Area Coverage Problems" by René Nix and James Cupp.

The toughest problems facing me on the job are:

- The product life-cycle is shorter. We just get to know the product, and it changes.
- Serviceability cannot keep abreast with technology changes.

Gerald E. Hayward
Nova Tronics
Dartmouth, Nova Scotia

Everyone and everything should be IBM PC-programmable. I already own seven different programmers!

Monte Tremont
M-Tron Enterprises
Berlin, NJ

The April issue is one of the best you've published. I read them all cover-to-cover.

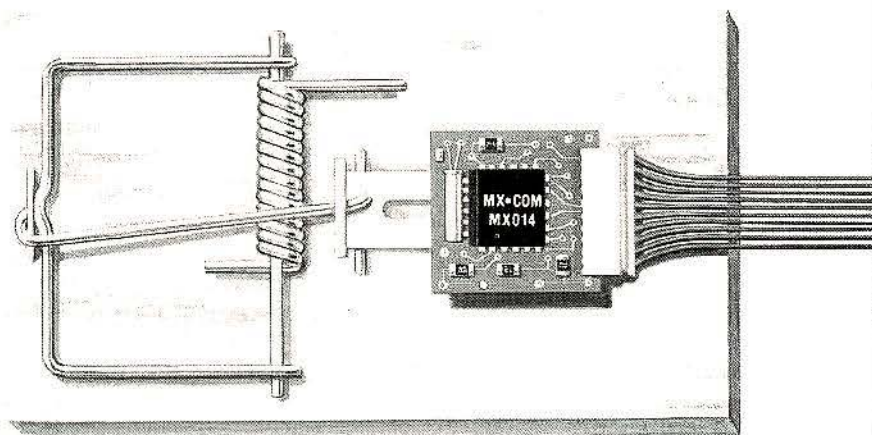
The most interesting article in the issue is "Protective Measures Stop Lightning Damage" by Arnold Domanus.

The toughest problem facing me on the job is manufacturers that split service manuals. For example, they print programming information in a sub-manual, then they do not give the manual number or let a valid technician know he needs to order two manuals to get the job done!

Ray Kashubosky
RK Communications
Farmington, MI

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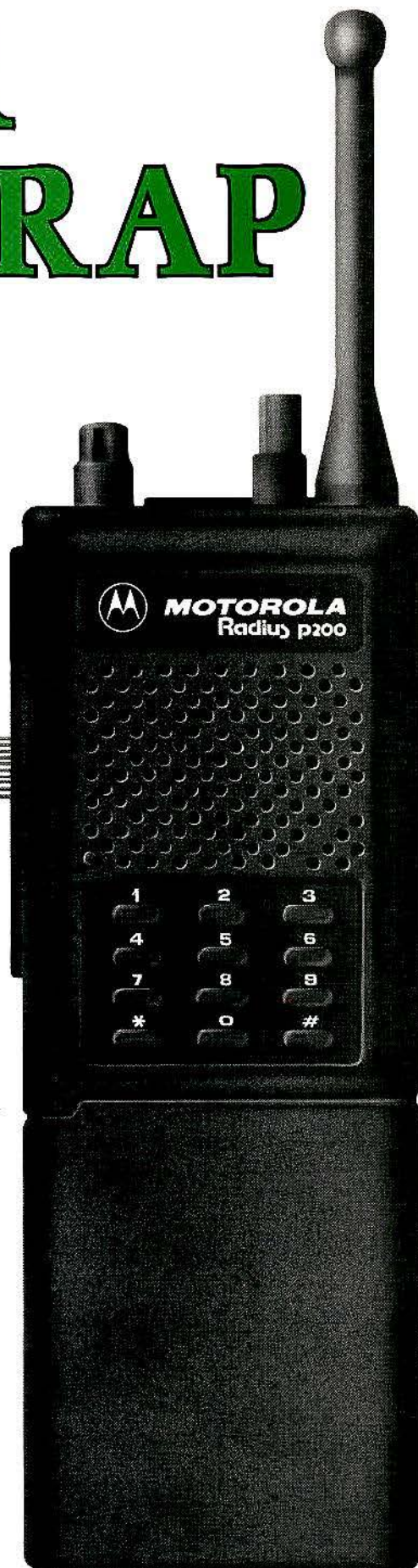
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★ 5th Annual ★

★ BUYERS' GUIDE 1992 ★

MRT's annual directory provides you pertinent information you will want to retain for quick reference year-round. Products and services are listed, as well as brand names, trade associations and FCC offices.

By MRT editorial staff

Welcome to the fifth annual directory issue of *Mobile Radio Technology*. We believe you will find it a complete product and services source for the mobile radio industry.

Industry authorities and our editorial advisory board helped us to establish informative categories and to compile data. We mailed questionnaires to suppliers and service companies, and we asked them to list the products and services they offer. This "Buyers' Guide" is designed to be an easily used reference for an entire year. It is divided into six sections: the **Product Directory**, the **Services Directory**, **Company Addresses**, **Brand Names Directory**, **Trade Associations** and **FCC Offices**.

The **Product Directory** lists more than 100 categories of equipment and suppliers. Under each heading is a complete list of the companies that have that particular product available. More than 750 companies are listed.

Under the product headings, you will find **companies listed in blue**. These companies are advertisers in this issue, and the page location serves as a direct reference for additional information directly from the manufacturers, either by contacting them or using the Fast Fact number assigned to the advertisements and returning the Fast Fact Card bound in the back of this issue. (See page 147.)

The **Services Directory** follows the Product Directory and lists 12 services categories and the companies that pro-

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vide them. Here again, you will find **blue listings for advertisers** in this issue.

Following the product and services directories, you will find an alphabetized index of **Company Addresses**, as well as phone numbers for convenience, for all the companies listed in this "Buyers' Guide." Regional sales contacts are listed for advertisers in this issue.

New this year is the **Brand Names Directory**. This directory is an alphabetized list of brand names in the mobile radio industry and the associated manufacturers of these products.

As part of our directory, *MRT* sorts out the various trade groups in mobile radio in our **Trade Associations** listing. Here you will find the addresses and phone numbers of the numerous trade associations representing mobile radio interests.

FCC Offices are listed for your convenience following industry associations listings.

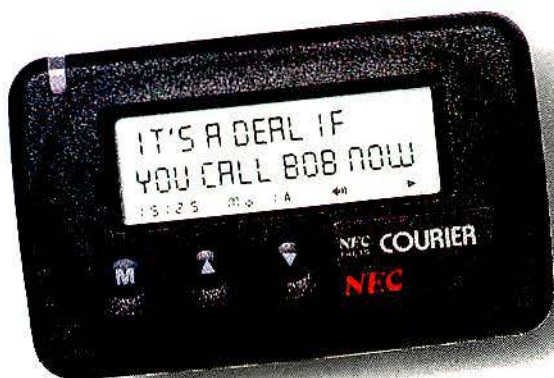
For your convenience, two Fast Fact Cards are bound into this issue. Each card is valid for a full year. By circling the appropriate numbers associated with manufacturers' and services companies'

advertisements, you can obtain additional information directly from the product or service source.

The editorial staff has made every attempt to make this "Buyers' Guide" an accurate and comprehensive listing of suppliers and services companies in the mobile radio field. Nevertheless, because of the number of suppliers in this field and new entrants always are surfacing in this industry, some companies or organizations and products or services may have been overlooked.

If you are one of these companies or organizations, please send your company's name and address during the upcoming year to Pat Blanton, *MRT* Directory Editor, P.O. Box 12901, Overland Park, KS 66282-2901. This will help make the "Buyers' Guide" an even better reference.

To be listed in next year's "Buyers' Guide," send your company name and address to Pat Blanton, Directory Editor, Mobile Radio Technology, P.O. Box 12901, Overland Park, KS 66282-2901.



Sooner.

to 32 characters on its easy-to-read, illuminated screen. Its 6500-character memory base provides you with push-button access to as many as 40 messages, addresses, memos or reminders.

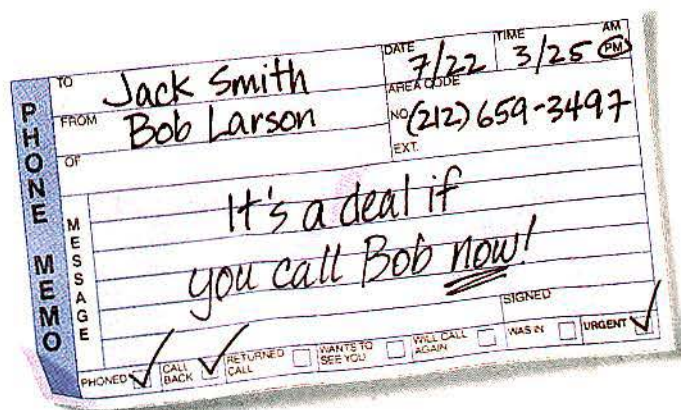
Another NEC pager worth checking out is the Facts Relay.TM It can store up to 16 messages of up to 20 characters each (maximum storage capacity of 200 characters). And its 12-character illuminated display is easy-to-read—even in the dark.



No matter where your business takes you, NEC's new Facts family of pagers will keep your messages coming. All are engineered with the quality and reliability you've come to expect from NEC, a world leader in computers and communications. Make sure you get armed with the Facts from NEC soon! For more information, please call 1-800-225-5664.

Some messages can't wait until you get back to the office. You can imagine the scenario. You're out on the road and your pager goes off. You check the screen and don't recognize the telephone number. Figuring there's no rush, you decide to wait until you get back to the office to find out who called.

But with NEC's Facts CourierTM pager, you can still take the message when you can't take the call. It spells out messages of up



Or later.

NEC

Circle (10) on Fast Fact Card

Announcing a ANI technology of in

To be precise, the proportions of this exciting breakthrough are 0.75" x 1.150" x 0.125". That's how small we've made our new CEU-1 sub-miniature ANI encoder. So it easily fits into just about any mobile or hand-held radio transceiver. And while that's the size of it, there's a whole lot more to the story.

LESS IS MORE. MORE OR LESS.

For starters, the CEU-1 encoder is compatible with the ultra-reliable STAR and GE-STAR® signaling formats. It identifies the source of

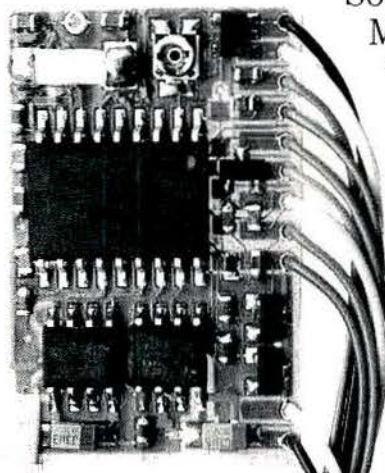
every radio transmission, and also transmits three additional messages.

So when there's a "Stuck-Mic," "Emergency" or "Man Down," you'll get the message first time, every time.

Or, if you prefer, program the CEU-1 to provide status or canned messages instead of emergency messages.

A BETTER ANI ENCODER FOR A LOT OF LITTLE REASONS.

When you make a product as small as this, the little things really count. So we built the CEU-1 encoder using a high-quality, epoxy-glass circuit board and



*The CEU-1
shown 2½ times
actual size.*

breakthrough in credible proportions.

Teflon®-insulated, anti-crush radio interface wires. It's the kind of quality you'd expect from ANI encoders costing a lot more.

STAY TUNED FOR SOME EXCITING PROGRAMS.

Our hand-held, battery-operated field programmer is a welcome change from awkward PC or bench-type programming units.

That means you can quickly and easily set over 20 field programmable parameters and change ID's in a flash.

*Programming is fast
and simple with
our battery-operated,
hand-held
programmer.*



THREE-YEAR, NO-HASSLE WARRANTY.

Our three-year, no-hassle warranty means just what it says. If the CEU-1 encoder fails due to materials or workmanship within three years of installation, we'll promptly replace it. Free. End of message.



AND IT'S ONLY HOW MUCH?

At a list price of only \$86, the CEU-1 encoder costs about the same as encoders with a lot less quality and far fewer features.

To find out more about our incredible little breakthrough in ANI technology, contact your mobile radio dealer or Jack Batchie, Sales Manager. Cimarron Technologies, 934 South Andreasen Drive, Suite G, Escondido, CA 92029-1919, **1-800-487-7184** in USA and California. Or (619) 738-3280.

CIMARRON TECHNOLOGIES

GE-STAR is a registered trademark of General Electric Corporation.

Teflon is a registered Trademark of E.I. DuPont

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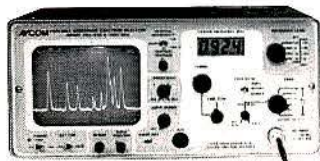
AVCOM's New PSA-65A Portable Spectrum Analyzer

The newest in the line of rugged spectrum analyzers from AVCOM offers amazing performance for only \$2,855.

AVCOM'S new PSA-65A is the first low cost general purpose portable spectrum analyzer that's loaded with features. It's small, accurate, battery operated, has a wide frequency coverage - a must for every technician's bench. Great for field use too.

The PSA-65A covers frequencies thru 1000 MHz in one sweep with a sensitivity greater than -95dBm at narrow spans. The PSA-65A is ideally suited for 2-way radio, cellular, cable, LAN, surveillance, educational, production and R&D work. Options include frequency extenders to enable the PSA-65A to be used at SATCOM and higher frequencies, audio demod for monitoring, log periodic antennas, 10KHz filter for 2 MHz/DIV range, carrying case (AVSAC), and more.

For more information, write, FAX or phone.



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FAX: 804-794-8284, TLX: 701-545

Circle (43) on Fast Fact Card

The New STABILOCK® 4015 Radio Test Set Tests Great—Less Weight

Under
\$13K/3 Year
Warranty

Finally, a two-way radio tester that fits under a helicopter seat, weighs less than 20 lbs., provides all the capabilities you've dreamed of in one unit, and doesn't cost an arm and a leg.

The STABILOCK 4015 packs a lot of features in a compact design:

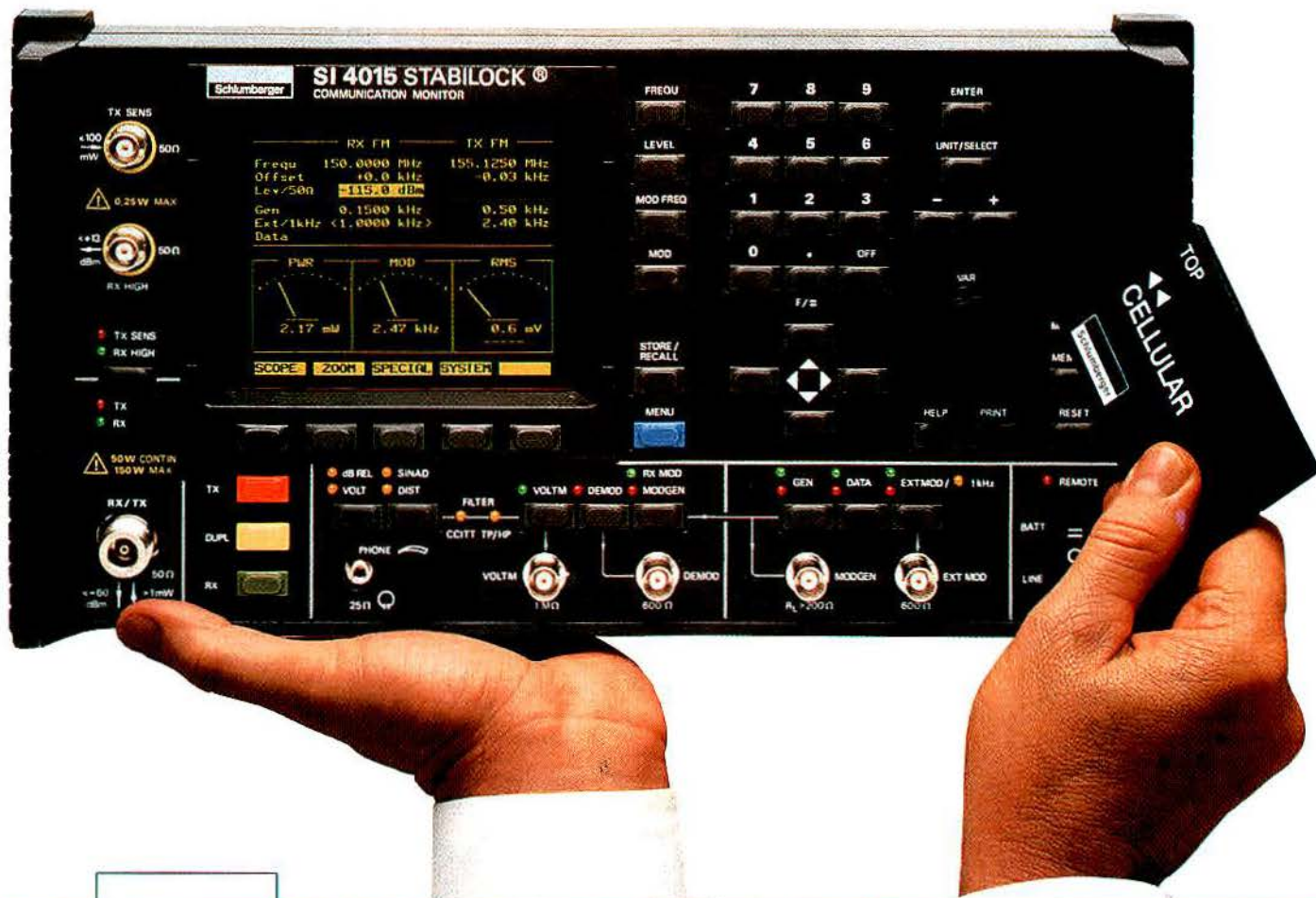
- ☐ spectrum analyzer with audio
- ☐ electroluminescent display for easy viewing night or day
- ☐ licensed CLEAR CHANNEL LTR® testing capability
- ☐ memory cards to load and run tests automatically, including all cellular formats
- ☐ digital storage oscilloscope
- ☐ internal battery

Lighten your two-way test load today—call for more information on the STABILOCK 4015:

1-800-225-5765 (in MA: 508-671-9700).

CLEAR CHANNEL LTR is a registered trademark of the EF Johnson Company. STABILOCK 4015 is a registered trademark of Schlumberger Technologies.

Quality Test Solutions
Schlumberger Technologies



Schlumberger Technologies

Schlumberger Instruments
P.O. Box 7004
829 Middlesex Turnpike
Billerica, MA 01821, USA
Phone-508-671-9700
Fax-508-671-9704
1-800-225-5765 (outside MA)

Schlumberger Instruments
Victoria Road
Farnborough, Hampshire
GU14 7PW, England
Phone-44 252 544433
Fax-44 252 543864
Telex-858245

Schlumberger Instruments
50 Avenue Jean Jaurès
BP 620-06
F-92542 Montrouge Cedex, France
Phone-33 1 47 466700
Fax-33 1 47 466727
Telex-631468 ENERINS

Schlumberger Technologies GmbH
Ingolstädter Str. 67a
D-8000 München 46
West Germany
Phone-49 89 31889-0
Fax-49 89 31889-160
Telex-5215015 SMG D.

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National Phone Number Centers
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PAGETEK

The Monitoring and Control Experts

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TE Systems
Tessco
TPL Communications

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Including Cavity Filters, Circulators,
Hybrid Couplers, Isolators,
Preselectors, Receiver
Multicouplers, Receiver Pre-
Amplifiers, Repeater Duplexers, RF
Filters, Transmitter Combiners

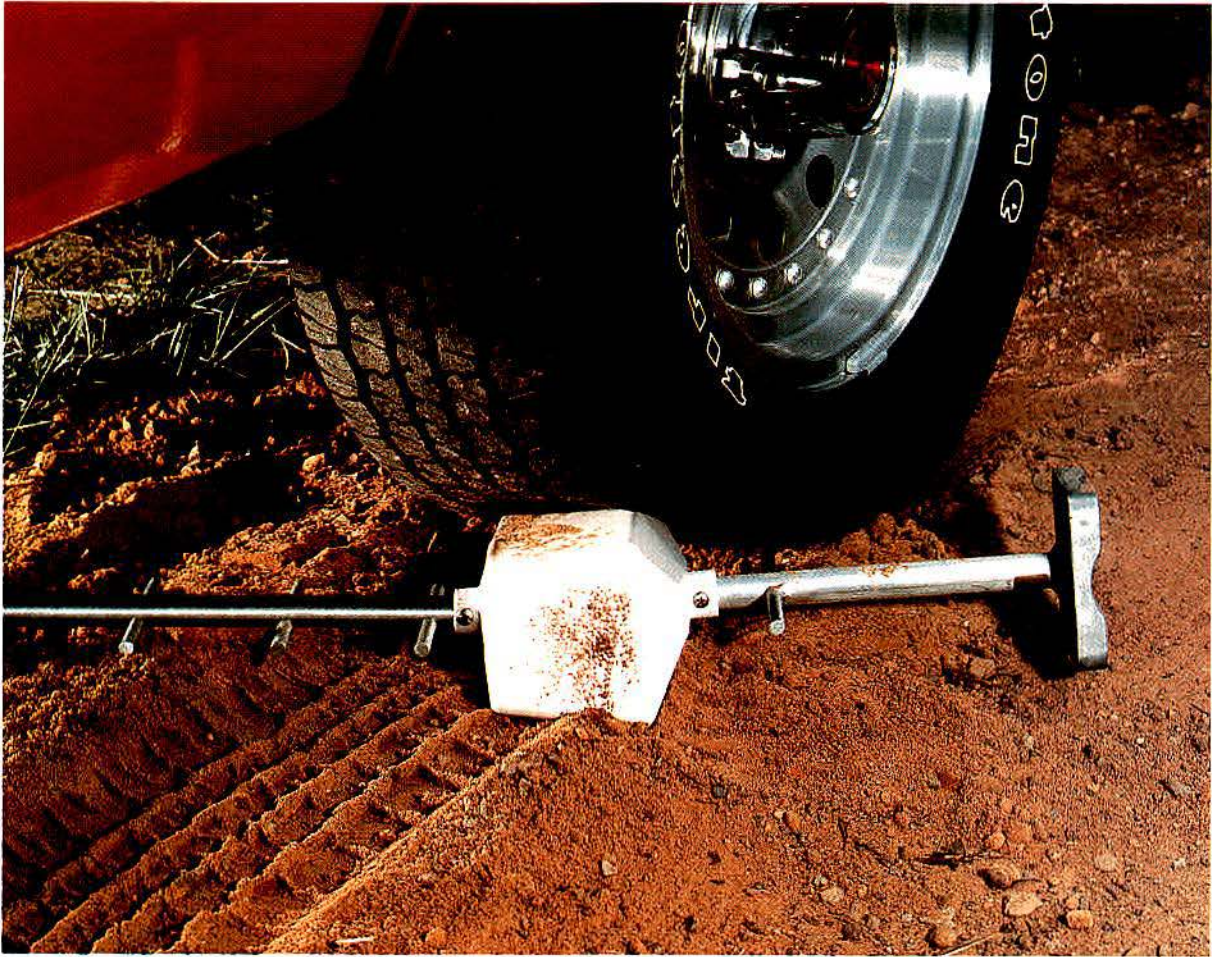
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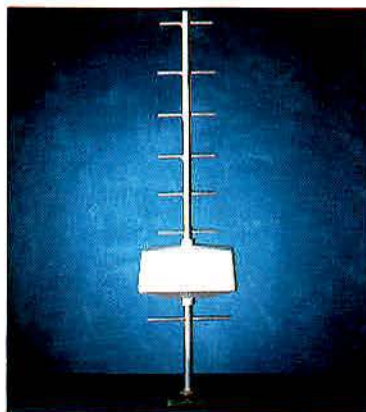
CELWAVE Quality:



Road tested tough.

It isn't likely the top of your transmitter tower will ever be subjected to heavy vehicular traffic, but Celwave actually ran over the radome of its new PD10108 Yagi antenna just to see how rugged it really is.

How rugged is it? Rugged enough to get run over and come out undamaged. Rugged enough to be part of an 806-960 MHz antenna specifically designed for control station operation with director and reflector elements of solid 6061-T6 aluminum rod precision welded to eliminate misalignment problems during shipping, installation and service. You can't get more rugged than that.



The radome completely encloses the active element eliminating pattern distortions caused by

icing or heavy rain. This true 10 dB Yagi (E.I.A. Standard 329) has a VSWR under 1.5:1 for a bandwidth exceeding 80 MHz. The small surface area of the PD10108 antenna minimizes wind resistance and conserves tower loading capacity while providing heavy duty coverage.

Altogether, the PD10108 Yagi gives Celwave a very tough to overcome advantage in customizing solutions to your antenna site problems. At the very top, the very bottom and everywhere in between.

CELWAVE, Route 79, Marlboro, NJ 07746. Tel 201-462-1880. Telex 4944313 CEL NJ.

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ICOM Can Open the Door To All Your Communication Needs



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(206) 454-8155

All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. CORP11990

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ATTENUATORS AND DUMMY LOADS

AAT Communications	
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Diversified Electronics	
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DTS Electronics	
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Eastcom Industries	
Electronic Products	
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Hite Electronic Sales	
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Jan Industrial Electronics	
Manon Engineering	
Marketronics	106
MCM Electronics	
Meridian Communications	47
Metrocom Services	
Midland Land Mobile Radio	IFC
Morcom International	
Motorola Land Mobile Products	
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Mouser Electronics	

Multiplier

Multiplier Industries	
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NEC America Mobile Radio Div	11
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ORA Electronics	
PCI-Pekaar Communication	
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Photocomm	
Primus Electronics	118
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Quantum Batteries	
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Smith Communications Service	
Sonar Radio	
Statpower Technologies	
Suneco	
Tadiran Electronic Industries	
Talley Electronics	
TDI Batteries	
TEDI	
Tekk	
Tele-Path	
Tessco	
Uniden Corporation of America	
Union Electronic Distributors	
Unitech Industries	
URDC Measurement	
VCP International	100, 101
VDO-PAK	
W&W Associates	79

When every second counts...



TDM-150: Our state-of-the-art, 120+ channel console

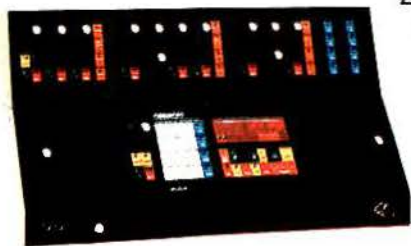
Count on the reliability and performance of communications consoles from Orbacom

In an emergency, reliable communications are the lifeline for survival. That's why so many communications systems rely on Orbacom's CALIDA and TDM-150 consoles. Their superior performance and solid dependability have been proven in the most demanding applications.

If you need the control flexibility of a big console on a small budget, CALIDA is for you. CALIDA handles 16 channels, includes a multi-format paging and signalling encoder, is completely user programmable, and features a 12/24 hour clock, VU meter, alert tone, crosspatch, service intercom, desk mic with PTT and monitor switches, surge protection, and a wealth of other professional features.

If your service requires a state-of-the-art dispatch console, Orbacom's TDM-150 is the solution. TDM-150 is a custom system, so we'll configure it the way you need it — up to 120 channels or more and 120 positions. TDM-150 uses time-

division multiplex (TDM) digital audio processing and complete microprocessor control. Operation is simple and menu-driven. Reliability is ensured through surge protection, self-healing diagnostics, and battery backup. Eight levels of multi-channel radio and telephone patch may be run simultaneously, and an internal paging signalling encoder generates any sequence you'll ever need. Plus the best two-year console warranty in the business.



CALIDA: Big console flexibility for smaller systems



Mini-TDM-150 Desktop Console

Take your pick. CALIDA for professional performance in smaller systems. And TDM-150 for state-of-the-art performance on 120 channels or more. Either way you can count on Orbacom. Our communications consoles are the most reliable you can buy, and have been since 1970.

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**ORBACOM
SYSTEMS, INC.**

Circle (15) on Fast Fact Card

Webster Communications
Wisco International

BATTERY CHARGERS, TESTERS AND CHARGER-ANALYZERS

Adams Distributing
Adcour
Advanced Cellular of Philadelphia
Advanced Fox Antennas
Advanced Videotech
Alexander Batteries 84
Alltel Supply
Antel Communications
Antenna Farm
Battery Products
BatteryPro Centres
**Bendis/King Mobile
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C. W. Wolfe Communications
Cadex Electronics
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Cellnet Communications
Cellular Enterprises
Cellular Solutions
Cellular Wholesalers
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Communications Associates 88
Copeland Engineering
CSC
Danmax Communication Ltd.
Delcom Radio
Diversified Electronics
Dowit Service
DTS Electronics
Eastcom Industries
Electronic Products
Encom Radio Services
FWT
Goldspar Communications
Heliotrope General
Hi-Com Systems
Hite Electronic Sales



HM Electronics Battery Systems Div.
Hutton & Company 95, 97, 99
Jan Industrial Electronics
Kenwood USA 45
Kintek Custom Products
Lapp
Manon Engineering
Marketronics 106
MCM Electronics
Meridian Communications 47
Metrocom Services
Midland Land Mobile Radio IFC
**Motorola Land Mobile Products
Sector** 59
Mountain Communications
Multiplier Industries
National Custom Enterprises
NEC America Mobile Radio Div 11
Newmar 117
ORA Electronics
Power Conversion Products
Powerline
Primus Electronics 118
Pulstar Distributing
Quantum Batteries
Radio Wholesale Marketing
Ritz Electronics
Saft Batteries

Santa Fe Distributing 113
Secom Systems
SLS 32
Sharp Communication
Statpower Technologies
Syntec Communications Systems
Talley Electronics
Tekk
Tele-Path
Tessco
Uniden Corporation of America
Unitech Industries
URDC Measurement
US Power Converting
Vanner
VDO-PAK
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W&W Associates 79
Webster Communications
Wisco International

CABLE FAULT LOCATORS

Alcom Electronics
Brunelle Instruments
Cal-Scope
Contact East
DTS Electronics
Eagle Wichita
Hite Electronic Sales
Jan Industrial Electronics
Jensen Tools
L-Tronics
Marketronics 106
Riser-Bond Instruments
Tele-Path
Tessco

CASES FOR PORTABLE EQUIPMENT

Adams Distributing
Advanced Fox Antennas
Advanced Videotech
Antenna Farm
AW Enterprises 120
Bee Electronics 115
**Bendis/King Mobile
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Braley Communication Systems
Cellnet Communications
Cellular Solutions
Comark Distributing
Communications & Signals
Communications Associates 88
Contact East
Continental Leavitt Communications
Danmax Communication Ltd.
Diversified Electronics
DTS Electronics
Eastcom Industries
Encom Radio Services
Ericsson GE Mobile Communications
Hutton & Company 95, 97, 99
Jan Industrial Electronics
Jensen Tools
Kenwood USA 45
Leathersmith 94
Lone Peak Designs
Manon Engineering
Marketronics 106
Meridian Communications 47
Metrocom Services
Midland Land Mobile Radio IFC
MobileOffice Products
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Sector** 59
Norand

ORA Electronics
PCI-Pekaar Communication
The Pouch
Primus Electronics 118
Pulstar Distributing
Radio Barn
Radio Wholesale Marketing
Santa Fe Distributing 113
Secom Systems
Sharp Communication
Talley Electronics
TEC Cellular Antenna
TEDI
Tekk
Tele-Path
Tessco
Uniden Corporation of America
US Power Converting

CELLULAR ACCESSORIES

Advanced Cellular of Philadelphia
Advanced Fox Antennas
Advanced Videotech
Anchor Graphics
Antel Communications
The Antenna Company
Antenna Farm
Antenna World
Apollo Telecommunications
Audiovox
Battery Products
Business Wholesale
C&S Sales
Cellabs
Collect Products
Cellnet Communications
Cellular Directions
Cellular Enterprises
Cellular Solutions
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Compquest
Comtelco Industries 118
Continental Leavitt Communications
D&R Associates
DW Electrochemicals
dh Mobile 43
Drive Phone
DTS Electronics
Eagle Wichita
Eastcom Industries
Electronic Products
Elenco Electronics
Encom Radio Services
Ericsson GE Mobile Communications
ExCellular Communications
Hutton & Company 95, 97, 99
Jan Industrial Electronics
JB Communications
Kerygma Technologies
Kintek Custom Products
Kyodo West
Lucas Ledex
Manon Engineering
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MCM Electronics
Meridian Communications 47
Metrocom Services
Millidyne
Mobile Installers Products
MobileOffice Products
**Motorola Land Mobile Products
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Mountain Communications
Multiplier Industries
National Phone Number Centers
NEC America Mobile Radio Div 11
Nokia-Mobira
Oklahoma Two-Way
ORA Electronics
PCI-Pekaar Communication
Primus Electronics 118
Pulstar Distributing
**Radiation Systems
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Santa Fe Distributing 113
Scientific Dimensions
Secom Systems
Signature International
SMC Electro-Mount 109
Statpower Technologies
Stealth-Cellular IC
Talley Electronics
TEC Cellular Antenna
TEDI
Tele-Path
TeleRepair
Telular
Tessco
Transcript International 8
Uniden Corporation of America
Union Electronic Distributors
Unitech Industries
VDO-PAK
VSI Telecommunications

CELLULAR ANTENNAS

Adams Distributing
Advanced Cellular of Philadelphia
Advanced Fox Antennas
Advanced Videotech
Allgon
Alltel Supply
Antek Antennas
Antel Communications
Antenes 126
The Antenna Company
Antenna Farm
Antenna World
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Austin Antenna
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Cellular Solutions
Cellular Wholesalers
Cellular World

CELWAVE 
DIVISION OF RADIO FREQUENCY SYSTEMS

Celwave 17, 48A, 48B
Central Tower



Centurion International 67
Childs Antennas
CNet
Comark Distributing
Communications Associates 88

COMTELCO INDUSTRIES, INC.

Comtelco Industries 118
Continental Leavitt Communications
Cushcraft/Signals 27

FREEMAN ENGINEERING ASSOCIATES, INC.

launches *integrated paging and voice mailbox* including

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- Fax Mailbox Capability
- Redundant Voice Storage
- Outdial with Call Forwarding
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"Today . . . send your messages at warp speed!"

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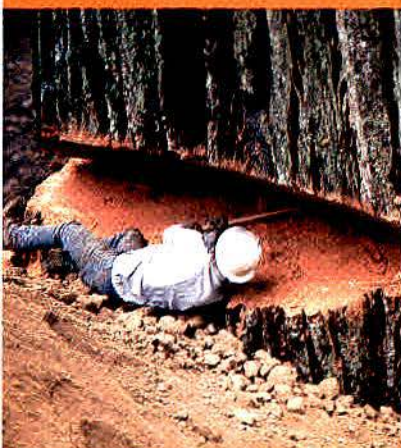
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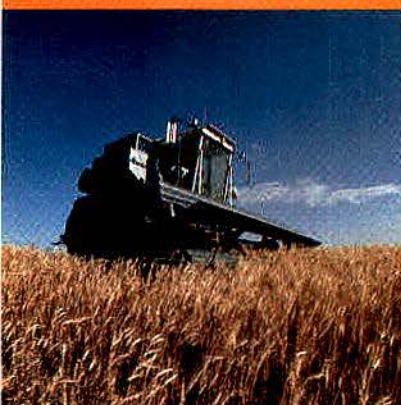
PUBLIC SAFETY



FIRE



LOGGING



REMOTE LOCATION

MAN-DOWN



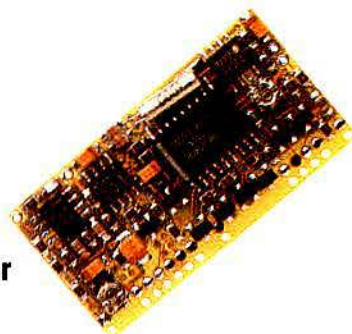
Now, Any Radio Can Call For Help Automatically

Coded Turns Any Two-Way Portable Radio Into a Personal Emergency Alarm

Any radio can have lifesaving Man-Down emergency call capability with the PED-24 encoder/decoder from Coded Communications. It's small enough to fit radios of all sizes and works even if the radio operator has fallen or is unconscious.

- PRE-ALARM TONE prevents false alarms.
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- Resets after auto acknowledgement.
- Open mic monitoring option.
- Silent operation option.

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(actual size)

Coded
communications

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Diversified Electronics	
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TEDI	
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TeleRepair	
Tessco	
Union Electronic Distributors	
Unitech Industries	
Wisco International	

CELLULAR MOUNTS

Advanced Cellular of Philadelphia	
Advanced Fox Antennas	
Advanced Videotech	
Antek Antennas	
The Antenna Company	
Antenna Farm	
Antenna World	
Audiovox	
Braley Communication Systems	
Cellnet Communications	

Cellular Enterprises	
Cellular Solutions	
Cellular Wholesalers	
Cellular World	
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Jon/Beau	
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L&R Communications	
Lone Peak Designs	
Marktronics	106
Maxrad	31
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Meridian Communications	47
Metrocom Services	
Mobile Installers Products	
Motorola Land Mobile Products	
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Pulstar Distributing	
Radiation Systems	
Mark Antennas Div	105
Santa Fe Distributing	113
Scientific Dimensions	
SMC Electro-Mount	109
Stealth-Cellular IC	
Talley Electronics	
TEC Cellular Antenna	
TEDI	
Tele-Path	
TeleRepair	
Tessco	
Transmission Structures	

CELLULAR PHONES

Advanced Cellular of Philadelphia	
Advanced Fox Antennas	
Advanced Videotech	
Antel Communications	
Apollo Telecommunications	
Audiovox	
Auto-Comm Engineering	
Braley Communication Systems	
Business Wholesale	
Cellnet Communications	
Cellular Enterprises	
Cellular Wholesalers	
Cellular World	
Communications Associates	88
Communications Insurance	
Consultants, CMT Leasing	
Continental Leavitt Communications	
D&R Associates	
Drive Phone	
Encom Radio Services	
Ericsson GE Mobile Communications	
ExCellular Communications	
General Communications Services	
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Kyodo West	

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Mitsubishi International	
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OKI telecom	
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Tele-Path	
TeleRepair	
Telular	
Uniden Corporation of America	
VSI Telecommunications	

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C. W. Wolfe Communications	
Channel Element Headquarters	
DTS Electronics	
Hi-Com Systems	
Hite Electronic Sales	
Hutton & Company	95, 97, 99
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ICM Communications	
Jan Industrial Electronics	
Lesmith	
Metrocom Services	
Motorola Land Mobile Products	
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PCI-Pekaar Communication	
PMC Associates	
Savoy Electronics	
Sentry Manufacturing	
Spectracom	
Standard Communications	61
TEDI	
Tele-Path	
Temex Electronics	
Wisco International	

CLOSED-CIRCUIT TELEVISION EQUIPMENT

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Alltel Supply	
Auto-Comm Engineering	
Business Wholesale	
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DTS Electronics	
Electronic Products	
Hirschmann of America	
Jan Industrial Electronics	
The Radio Shop	
Richardson Electronics	
Santa Fe Distributing	113
Secom Systems	
Skaggs Telecommunications	
Service	63

TorFind Enterprises	
Uniden Corporation of America	

COAXIAL CABLE

Cable, Connectors, Switches, Supports and Accessories

Adams Distributing	
ADC Telecommunications	
Alltel Supply	
Andrew	
Antek Antennas	
Antenna Farm	
Antenna Specialists	115, 117, 119, 121
Auto-Comm Engineering	
AVA Electronics	
Avcom of Virginia	14
Band-It-IDEX	92
Bird Electronic	
Cartwright Communications	53

CELWAVE

DIVISION OF RADIO FREQUENCY SYSTEMS

Celwave	17, 48A, 48B
Central Tower	
Childs Antennas	
Comark Distributing	
Communications & Signals	
Communications Associates	88
Communications West	
Commwell International	
CompuSource	
Comtelco Industries	118
Crown Electronics	
Cushcraft/Signals	27
CZ Labs	
DW. Electrochemicals	
Danmax Communication Ltd.	
Dataprobe	
Decibel Products	
Diversified Electronics	
DP Electronics	
DTS Electronics	
Eastcom Industries	
Electronic Products	
EMR	107
Encom Radio Services	
Gabriel Electronics	
Goldspar Communications	
Hi-Com Systems	
Hirschmann of America	
Hite Electronic Sales	
Huber & Suhner	
Hutton & Company	95, 97, 99
Jan Industrial Electronics	
JB Communications	
Jensen Tools	
Larsen Electronics	73
Manon Engineering	
Marktronics	106
Meridian Communications	47
MFJ Enterprises	
Motorola Land Mobile Products	
Sector	59
Mountain Communications	
Mouser Electronics	
NCG	
Nemal Electronics International	
ORA Electronics	
Piher International	
Primus Electronics	118
Pulstar Distributing	
Radiall	
Radio Barn	
Relm Communications	37
RF Industries	
Richardson Electronics	
Shaffer Communications Group	

Sinclair Radio Labs 92
 Spi-Ro Manufacturing
 Stealth-Cellular IC
 Talley Electronics
 TEDI
 Tele-Path
 Telect
 Tesco
 Union Electronic Distributors
 VDO-PAK
 Wisco International

COMPUTER-AIDED DISPATCH

Appropriate Data Communications
 AT&T
Coded Communications 24
 Colorado Hi-Tek
 Communications & Signals
 Dispatch Specialists
 DTS Electronics
 Fitzgerald Telecom
 Infocel
 Integrated Computer Concepts
 Interconnect Specialists
 Itron
 Magnavox/Nav-Com
 MaSys
 METS
 Micro-Quick Systems
Midian Electronics 41
 Modems Plus
 National Mobile Radio
 Communications
 Navigation Data Systems
 Omnicom
 Omnisoft
 Penta
 Positron Industries
 PRC Public Management Services
 Rayfield Communications
 Secom Systems
Sigstone 44
 TEDI
 Telecommunications Technology
 TLP Technologies
Transcrypt International 5
 U S West Public Safety Group
 Uniden Corporation of America
 Wisco International

CONSOLES

Adams Distributing
 Avtec
 Catcom Systems
CML Technologies 29
 Communications & Signals
 Console Systems
 DTS Electronics
 ElectroCom Automation
 Electronic Products
 Ericsson GE Mobile Communications
 Jon/Beau
 Kustom Signals
 Manon Engineering
 Mecham Electronics
 Modular Communications Systems
Motorola Land Mobile Products
 Sector 59
 National Mobile Radio
 Communications
Orbacom Systems 21
 Positron Industries
 Rayfield Communications
 Secom Systems
Skaggs Telecommunications
 Service 63

TEDI
 Telecommunications Engineering
 Associates
Transcrypt International 5
Vega 1
 Webster Communications
 Wisco International
Zetron 85

CRYSTALS

Ace Communications 98
 Adams Distributing
 Advanced Videotech
 B-D Crystal
Bonar 64
 Cal Crystal Lab
 DTS Electronics
General Communications 83
 Hi-Com Systems
 Hite Electronic Sales
Hutton & Company 95, 97, 99
 Hy-Q International (USA)
 ICM Communications



Jan Crystals
 Jan Industrial Electronics
 K-W Mfg.
Kenwood USA 45
 Lesmith
 M-Tron Industries
 Marden Electronics
 Morcom International
Motorola Land Mobile Products
 Sector 59
 Mouser Electronics
NEC America Mobile Radio Div 11
 NKX
 Savoy Electronics
 Sentry Manufacturing
Standard Communications 61
 Tekk
 Tele-Path
 Temex Electronics
 Uniden Corporation of America
 Wisco International

DATA TRANSMISSION EQUIPMENT

AAT Communications
Ace Communications 98
 Adams Distributing
 Alcom Electronics
 Alltel Supply
 Bydatel
 Catcom Systems
 Cellabs
 Cellular Solutions
 Coherent Communications
 Communications & Signals
 Compuquest
 CompuSource
 Cromco Electronics
Datacom 121
 Dataprobe
Dataradio 87
 DTS Electronics
 ElectroCom Automation
 GRE America
 Henry Radio
 Jensen Tools
Marketronics 106
 Mecham Electronics

Meridian Communications 47
 METS
 MFJ Enterprises
 Microwave Data Systems
 Millidyne
 Mitsubishi International
Motorola Land Mobile Products
 Sector 59
 Navigation Data Systems
 Neulink
 Norand
 RaCoTek
 Radio Barn
 Real Time Strategies

RITRON®

Ritron 51
 Secom Systems
 Sierra Digital
 Solid-State Electronics
 Tactical Electronics
 Talley Electronics
 TEDI
 Tekk
 Telecommunications Engineering
 Associates
 Telemobile
 Telular
 Uniden Corporation of America
 Western Multiplex
 Wisco International
 Zebryk Engineering

DESOLDERING TOOLS AND WORKSTATIONS

Alcom Electronics
 Brian R. White Company
Communications Associates 88
 CompuSource
 Contact East
 DTS Electronics
 Endeco Div. of Leads Metal Products
Hutton & Company 95, 97, 99
 Jan Industrial Electronics
 Jensen Tools
 Manon Engineering
 MCM Electronics
Meridian Communications 47
Motorola Land Mobile Products
 Sector 59
 Mouser Electronics
 Pace
Primus Electronics 118
 Radio Barn
 Specialty
 Talley Electronics
 TEDI
 Tesco
 Ungar
 Union Electronic Distributors
 Webster Communications
 Wisco International

DIRECTION-FINDERS

BMG Engineering
 Cal-Scope
 Communications & Signals
 Doppler Systems
 DTS Electronics
 L-Tronics
 Manon Engineering
Motorola Land Mobile Products
 Sector 59

Rohde & Schwarz
 Secom Systems
 Simrad
 Sunflower Radio Products
 SWS Security
 Tech Comm
 TEDI
 TorFind Enterprises
 Uniden Corporation of America
 Wisco International

DIRECTIONAL COUPLERS— See WATTMETERS

DUMMY LOADS— See ATTENUATORS

FREQUENCY COUNTERS

AIE
 Alcom Electronics
 Anritsu
 Brunelle Instruments
 C&S Sales
 Cal-Scope
 Canadian Marconi
Communications Associates 88
 Contact East
Control Signal 28
 Danmax Communication Ltd.
 DTS Electronics
 Helper Instruments
 Hewlett-Packard
Hutton & Company 95, 97, 99
 Jan Industrial Electronics
 Jensen Tools
 John Fluke Mfg.
 Leader Instruments
 Manon Engineering
 Marconi Instruments
 Morcom International
 Mouser Electronics
 Optoelectronics
Primus Electronics 118
 Procomm
 Radio Barn
Santa Fe Distributing 113
 Secom Systems
 Talley Electronics
 TEDI
 Tesco
 Union Electronic Distributors
 Wisco International

GENERATORS, TONE AND RF SIGNAL

AIE
 Alcom Electronics
 Anritsu
 C&S Sales
 Cal-Scope
 Canadian Marconi
Communications Associates 88
Communications Specialists 10
 Cromco Electronics
 Danmax Communication Ltd.
Data Signal 42
 DTS Electronics
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Yagi Selector Guide

Model	Frequency MHz	Gain dBd	Survivability	
			mph	kph
PC804N	806-902	6	125	200
PC8010N	806-869	11	125	200
PC8210N	824-896	11	125	200
PC8910N	896-940	11	125	200
PC9010N	928-960	12	125	200
PC904N	895-980	6	125	200

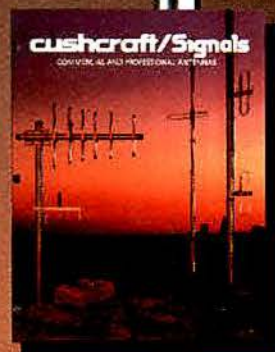
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- True omnidirectional performance
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Omni Selector Guide

Model	Frequency MHz	Gain dBd	Survivability	
			mph	kph
S8060B	806-866	Unity	125	200
S8960B	896-960	Unity	125	200
S8064B	806-866	4	125	200
S8964B	896-960	4	125	200

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Motorola Land Mobile Products
 Sector 59
 Mouser Electronics
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 Radio Barn
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 Advanced Videotech
 Alltel Supply
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 California Radio
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Cellabs
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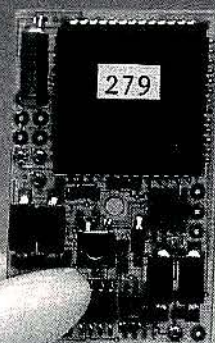
INTERCONNECTS

Including Message Accounting

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Company Addresses begin on page 60

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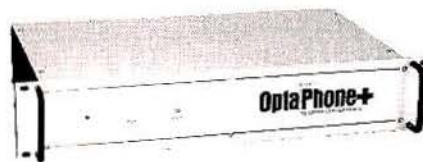
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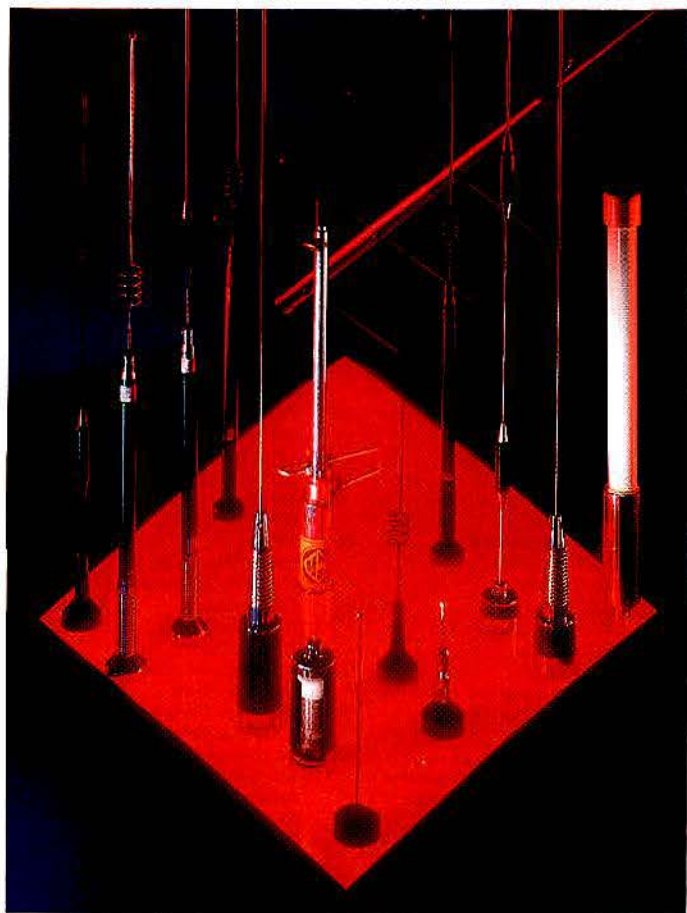
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Including Console, DTMF, Ear,
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When a call reaches an "Attendant" mailbox, it allows the caller to leave a message for the "main desk" or any individual in the company by "extension number", to play one or more

"directories" of extension numbers, or to play informative messages.

Each mailbox can notify an individual pager, and can even have a direct DID number. The system also allows messages to be transferred from mailbox to mailbox. Messages left at the "front desk" can be transferred to an individual's mailbox upon retrieval by the receptionist.

2400 Baud POCSAG

While other manufacturers are still struggling with 1200 baud POCSAG, Unipage has already begun testing 2400 baud POCSAG in the field! In a joint effort with two major paging carriers, a pager manufacturer, and a control system manufacturer, Unipage is testing the next leap in paging throughput.

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Unipage FAXpage™ will store and forward a printed copy of display messages to selected customers. FAXpage™ stores each customer's messages on hard disk for delivery to the

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Each customer can be programmed for selected message delivery times, and can be personalized with the customer's name at the top of the page.

Alpha Transcription

Unipage Alpha Transcription is the ultimate marriage of the voice mailbox and alphanumeric paging.

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MOBILE DATA SYSTEMS AND MESSAGE SWITCHES

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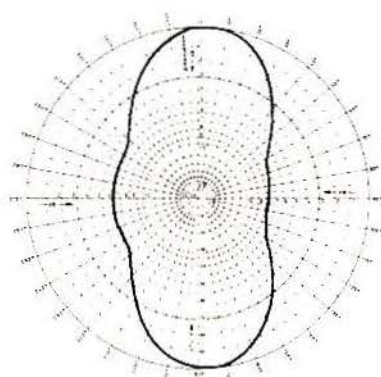
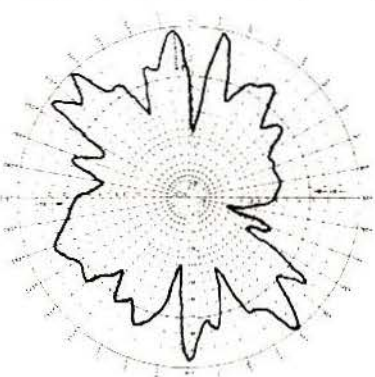
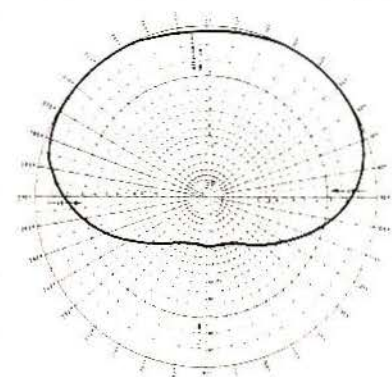
Carlson Communications 30

Company Addresses begin on page 60

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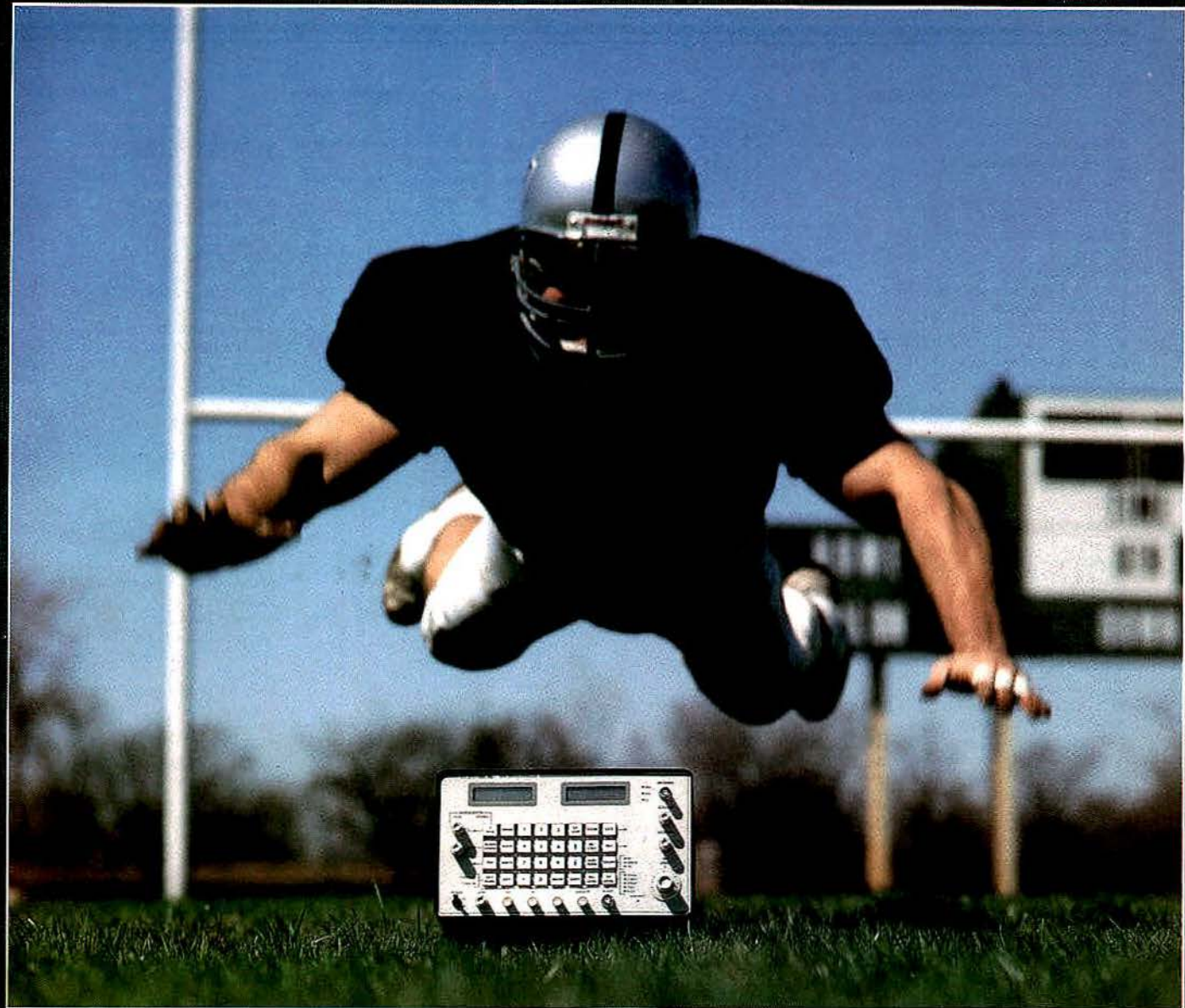
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RSP 400



CLEARLY THE • BEST

The RSP400 UHF Portable Radio.
Presented in 1991 by RELM Communications, Inc.



RSP500B



RML/RMV60B



LMV2548



RH256NB



Utili-Com



RELM Communications, Inc./7707 Records Street/Indianapolis/IN 46226/(317) 545-4281
RSP400 Clear shown is a special, one of a kind model and not available for purchase.



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PACKET RADIO EQUIPMENT

AAT Communications

PAGERS

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 Advanced Cellular of Philadelphia
 Advanced Videotech

PAGING SPECIALTIES AND ACCESSORIES

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Bee Electronics 115

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STONE & VOICE

Checkmate III features:

- Attractive ABS Black Case
- Size 3 1/8" x 2 1/16" x 1 5/16"
- Single "AA" Battery
- Variable Volume Control
- Locking Battery Compartment
- Second Tone Group Call Standard
- Standard 3 Year Warranty



Options

- Automatic Reset
- Low Battery Alarm
- 2-Channel
- Multiple Address
- Vehicular/Desktop Amplifier Charger
- Voice Storage
- First Tone Group Call
- Fixed Alert

The Shinwa Checkmate III is a 2-tone sequential tone and voice pager compatible with many tone and voice paging systems such as Plectron, Motorola, and GE.

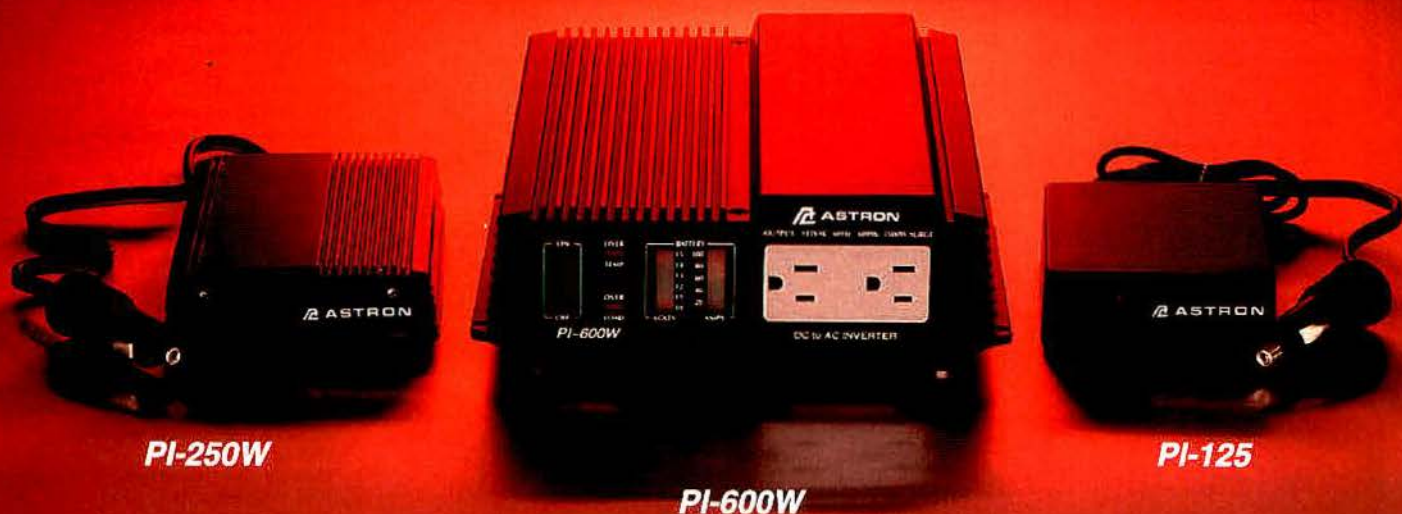
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Facsimiles

Battery Chargers for laptop & notebook computers, cellular phones and camcorders.

Computer peripherals, scanners and printers.

Stereos, VCR and TV.

Test equipment, power drills and other electronic equipment.

SPECIFICATIONS

	PI-125	PI-250W	PI-600W
Output power			
30 minutes:	125 watts	250 watts	600 watts
Surge:	200 watts	500 watts	1500 watts
Continuous:	100 watts	200 watts	500 watts
Input Voltage:	10 to 15 VDC	10 15 VDC	10 to 15 VDC
Output voltage:	115 VAC RMS \pm 5%	115 VAC RMS \pm 5%	115 VAC RMS \pm 5%
Output frequency:	60 Hz \pm 2%	60 Hz \pm 0.01%	60 Hz \pm 0.01%
Output waveform:	modified sinewave, phase corrected	modified sinewave, phase corrected	modified sinewave, phase corrected
Efficiency:	90%	90%	90%
Low battery alarm:	10.7 V	10.7 V	10.7 V
Low battery shutdown:	10 V	10 V	10 V
Dimensions (H x W x L):	1.2" x 3.5" x 4.5"	1.5" x 4.5" x 6"	3" x 9" x 10"
Weight:	14 oz.	1.25 lbs.	5.25 lbs.
Protection features:			
Over temperature:	Electronic shutdown	Electronic shutdown	Electronic shutdown
Overload:	Electronic shutdown	Electronic shutdown	Electronic shutdown
Short Circuit:	Electronic shutdown	Electronic shutdown	Electronic shutdown
Reverse polarity:	Fuse	Fuse	Fuse

Circle (29) on Fast Fact Card

ASTRON
CORPORATION

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YOUR ELECTRONIC EQUIPMENT IS BEING ATTACKED EVEN TODAY!



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\$48*



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Smallest Multi-Format, Multi Feature ANI with optional CTCSS encode

- ♠ ANIs: DTMF, CCIR, ZVEI, DZVEI, DDZVEI, NATEL, EEA, EIA, & MODAT*
- ♠ Optional 51 code CTCSS encoder
- ♠ Delayed CTCSS for inaudible ANI
- ♠ User-programmable tone timings
- ♠ Leading and/or Trailing ANI with mic mute
- ♠ Programmable ANI repeat delay timer
- ♠ Emergency ANI with repeat timer
- ♠ Emergency ANI "man down" delay timer
- ♠ Programmable ANI speed & front porch delay
- ♠ Programmable Busy Lockout
- ♠ Timeout Timer with stuck mic alert tone
- ♠ Available for Midian Zap™ & GE-Star® digital ANI formats (DFA-1/DFA-2)
- ♠ Dimensions: 1.1" x .88" x .22"



Model RT-8X/TRA



RTX-compatible Telephone to Radio Adapter

- ♦ Converts standard telephone with RJ11 connector to radiotelephone formats, rural phone, or extended phones when interfaced with simplex or duplex radio
- ♦ Full/Half-duplex or VOX capability
- ♦ Outputs 90 Volts to ring standard telephone bell
- ♦ Built-in dial and busy tones
- ♦ Programmable via telephone Touch Tone® keypad
- ♦ 1-12 digit connect and disconnect ANI
- ♦ 10 number memory dialer with last number redial
- ♦ Also available for DTMF interconnect applications

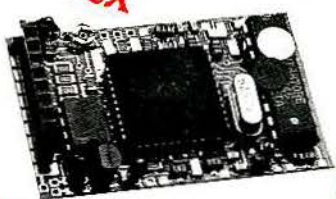
\$159*

Ready to Deal?

\$96*



Model RT-8X



Programmable DTMF Encoder/Decoder Compatible with RTX

- ♥ Three programmable decode numbers for selective calling with multiple ring codes
- ♥ 1-12 digit connect and disconnect ANI
- ♥ Ten number memory dial, last number redial
- ♥ Call routing digit for CES or RTX mobile call
- ♥ Trunking delay for connect ANI
- ♥ Time Out Timer & Busy Channel Lockout
- ♥ Carrier refresh for base or repeater COR/COS
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- ♥ Deadbeat Disable for lost or stolen radios
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- ♥ Timed automatic disconnect
- ♥ Forced decode reset
- ♥ Dimensions: 1.84" x 1.2" x .25"



Model ID-1



Keyboard Programmable Morse Identifier

- ♣ All messages & features programmable via 12-button Touch Tone®-style keypad with alphanumeric characters
- ♣ Sends 16-character station ID or 130-character message at programmable repeat intervals and speed
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- ♣ Programmable wait time after COR loss
- ♣ Can send morse tone manually
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\$72*

*Evaluation sample price reflects 20% discount off single piece dealer price. Limited time offer. 1 piece each model per customer.

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PRESELECTORS— See ANTENNA SITE EQUIPMENT

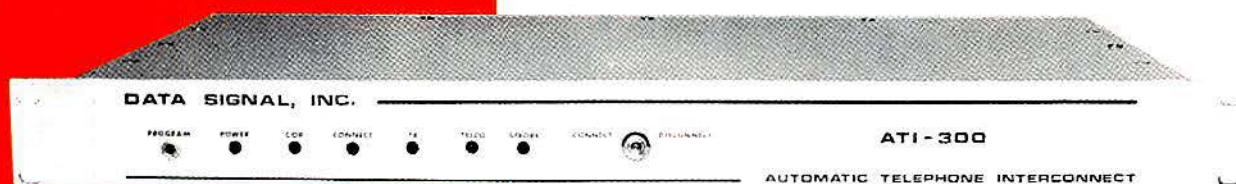
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Automatic Telephone Interconnects



**Three quality interconnects,
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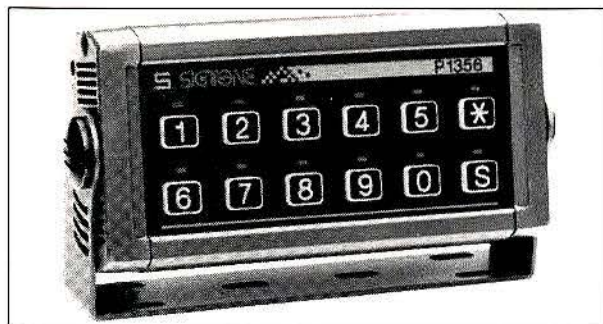
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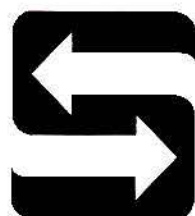
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Say it...without a word.



P1356/21 with back lit rubber buttons and rugged metal case



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- Status reporting allows vehicle/driver status messages to be sent to the dispatcher with the push of a button, without the need for voice communications from the driver.

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- Status reports are sent in the blink-of-an-eye automatically when a channel is available, and automatically acknowledged to ensure the message gets through, just by pushing a button.

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Works on LTR® Trunking

- Sigtone's LTR® Smart version makes operation on LTR® systems completely reliable. The P1356 knows exactly when a handshake has occurred, so there are no "lost" messages. Sigtone's unique and proprietary "Digital Analysis" decoding technique allows our decoders to work reliably at S/N levels as low as 0db, where speech becomes almost impossible.

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- ANI, emergency alarm modes, silent status interrogation, time-out-timer, horn honk, hidden mic input, and tone blanking are some of the other features available. A P1356 system can be implemented on your existing VHF, UHF, 800/900 MHz conventional or trunked radio system.

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Take in all the sites.

If you're scouting for antenna site locations, take a look at our newest—10 Universal City Plaza. The tallest structure in the area, it provides coverage of the San Fernando Valley, Glendale and Burbank.

If you need to serve the Bay Area, our new site at Crystal Peak covers the Pacific Coastline from Santa Cruz to Monterey, South Santa Clara County and the greater San Francisco area.

Add these two new sites to our catalog of properties that span Southern California from the Mexican border to Santa Barbara, and it's easy to see that no one is as accommodating as we are.

And if you're looking for extra attractions like secure facilities, standby power, air conditioning, and towers engineered to support large microwave dishes, as well as conventional and trunked community repeaters, look no further than Meridian Communications.

As always, Jack and Rich Reichler are ready to be your personal guide to the best in sight.



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(818) 888-7000 • Fax (818) 888-2857

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Metrocom Services
Midland Land Mobile Radio IFC
 Morcom International
Motorola Land Mobile Products
 Sector 59
 Oklahoma Two-Way
 Page Com
 Parkinson Electronics
 PCI-Pekaar Communication
 Portacom
 Procomm
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 Sharp Communication
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 Teletec
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 Cetacea Sound
 Jan Industrial Electronics
 Leader Instruments
 Union Electronic Distributors

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 Cellnet Communications
 Cellular Wholesalers
Curtis Electro Devices 36
 Diversified Electronics
 DTS Electronics
 Mannbros Technologies
Midland Land Mobile Radio IFC
Motorola Land Mobile Products
 Sector 59
 Official Scanner Guide
 Quantum Publishing
 Sonar Radio
 Tekk
 Tessco

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 Anritsu
 Antenna Farm
 Barnett Electronics
 Canadian Marconi
 Com-Ser Labs
 Communication Instruments
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 Cushman
 DTS Electronics
 Electronic Products
 Helper Instruments
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 Andrew
 Auto-Comm Engineering
 Bally Engineered Structures
 Broadcast Buildings
Broadcast
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 Central Tower
 Communication Engineers
 Communications West
 Contor Terminals
 CTI Installations
 DuPont Building
 Easi-Set Industries
 Enviro-Buildings
 FWT
 Goldspar Communications
 Haewa Communications
 Hartford Concrete Products
 Hi-Com Systems
 Hite Electronic Sales
 Kontek Industry
 Kullman Industries
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 UNR-Rohn
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 VFP

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 Communication Instruments
 Communications West
 D.W. Electrochemicals
 Enviro-Buildings
 Haewa Communications
 Hartford Concrete Products
 Lindgren RF Enclosures
 Mouser Electronics
 Pacific West Electronics
 Professional Systems
SMC Electro-Mount 109
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SIGNALING AND CONTROL EQUIPMENT, ANALOG

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 Advanced Videotech
 Alcom Electronics
 Alltel Supply
 Antenna Farm

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Automation & Electronics Engineering
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Cal-Scope
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EPI COMMUNICATIONS, INC.

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DTS Electronics
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Complex Systems
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DTS Electronics
Glenayre Electronics
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Spectrum Communications
Wisco International

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SOFTWARE

Business

ATA Services
Business Wholesale
Clever Software
Communications Software
Computer Resources
CyberSym Control Systems
Direct Comm. International
Enid 2-Way Communications
EPC International
ETRunk Systems
Gibson Research
Gilreath Software Service
In-Touch Management Systems
International Microsystems
Lynn-Arthur Associates
Micro-Quick Systems
Nynex Computer Services
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Fitzgerald Telecom
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In-Touch Management Systems
International Microsystems
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LCC
Lynn-Arthur Associates
Manon Engineering
Mech-Elec Systems
Micro-Quick Systems
National Mobile Radio Communications
Paging Products International
Pyramid Communications
Quantum Publishing
Rayfield Communications
Roberts & Company
Rocky Mountain Communications
Shaffer Communications Group
Sierra Digital
Slattery Software
SoftWright
Spartan Radio
Statistical Control Systems
Subscriber Computing

TCS

Technical Communications Software
TekNow
Telecommunications Technology
TLP Technologies
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Zebryk Engineering

Topographic

Applied Spectrum Research
CNet
Communication Engineers
CyberSym Control Systems
Direct Comm. International
EDX Engineering
Goldspar Communications
International Map Service
Kaval Electronics
Lawrence Behr Associates
LCC
Manon Engineering
Roberts & Company
Rocky Mountain Communications
SoftWright

TCS

Technical Communications Software

SOLDERING EQUIPMENT

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 Brian R. White Company
 C&S Sales
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When you feel acute chest pains,
call a doctor.



When your teeth are crooked,
call an orthodontist.



When you smell smoke,
call the fire department.



When you have a good hand,
call their bluff.



When you can't tie your shoelaces,
call a dietician.



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Tele-Path	
Telemobile	

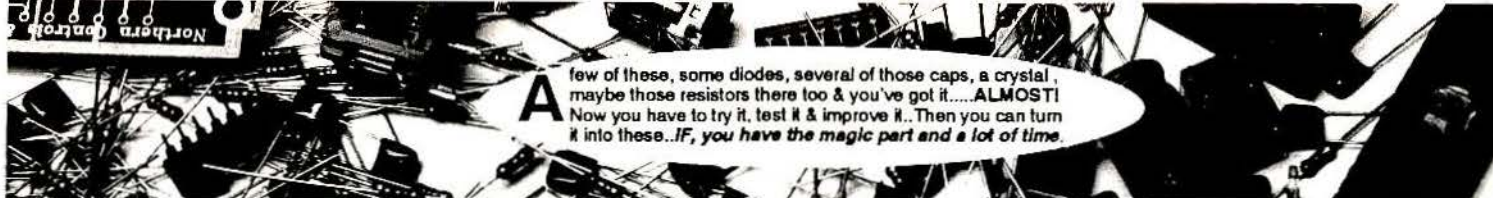
unibel

Unibel	126
Uniden Corporation of America	
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Continued on page 108



A few of these, some diodes, several of those caps, a crystal maybe those resistors there too & you've got it.....ALMOST! Now you have to try it, test it & improve it...Then you can turn it into these...IF, you have the magic part and a lot of time.

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\$329

➔ OR.....➔



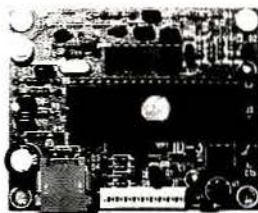
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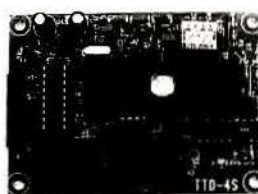
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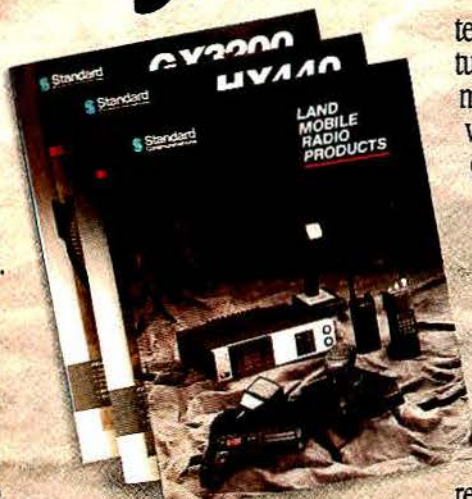


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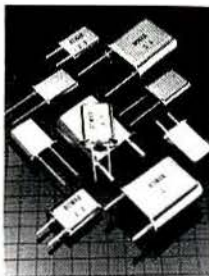
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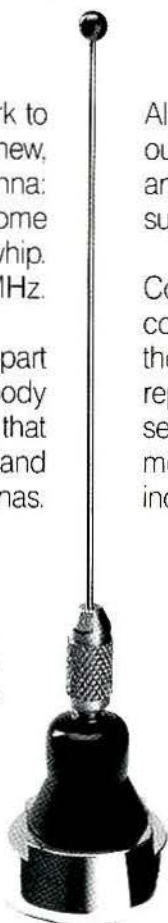
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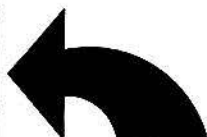
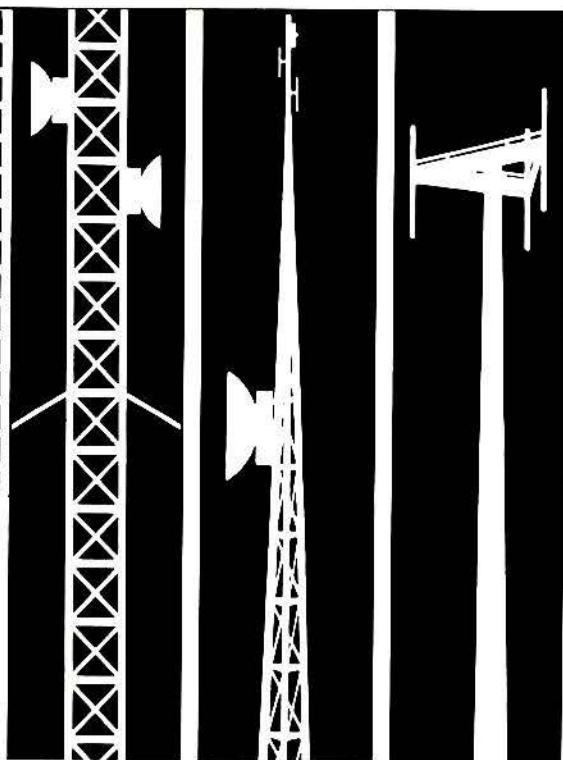
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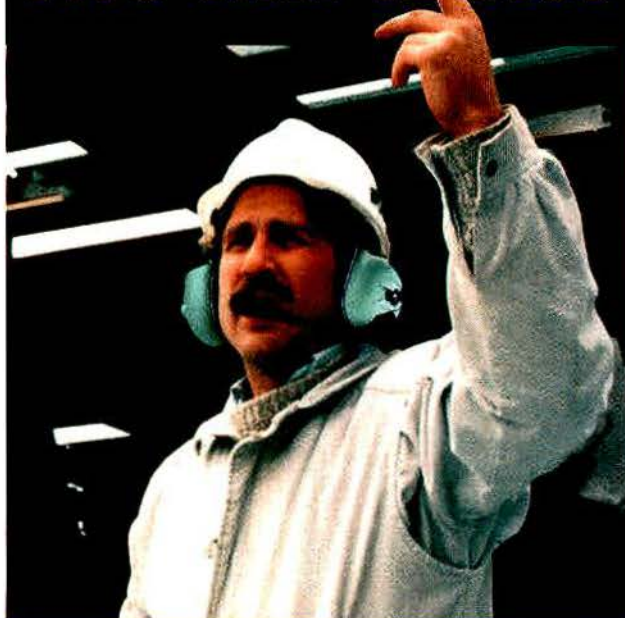
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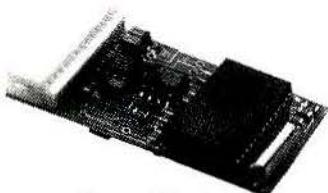
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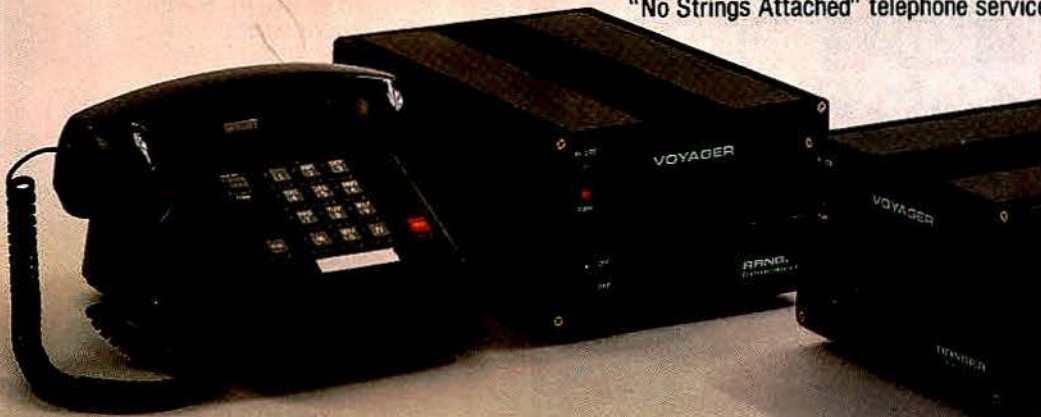
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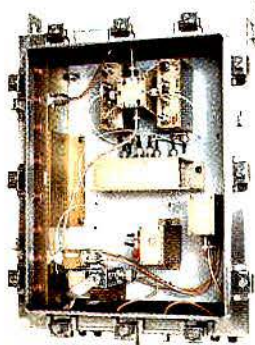
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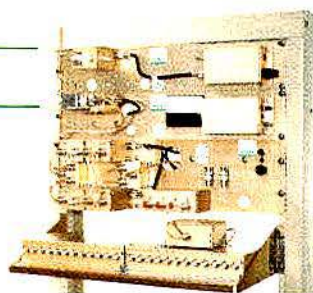
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Features include:

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- Last number redial.
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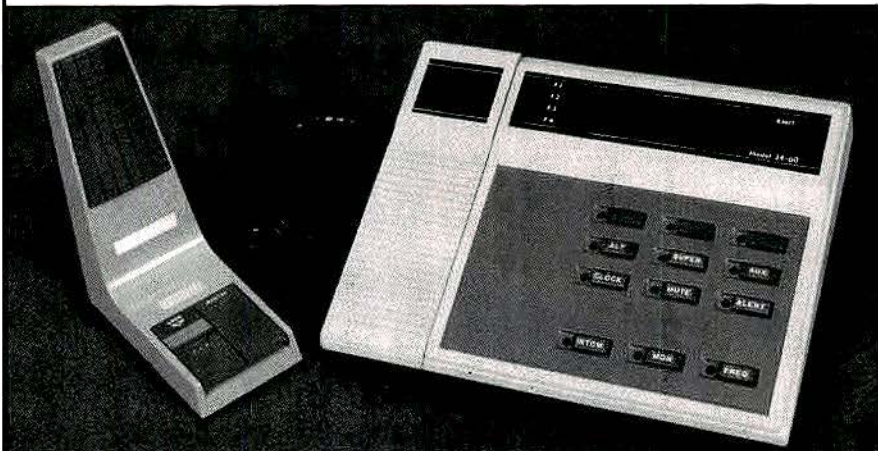
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If You Think All Phone Patches Are The Same, TAKE A CLOSER LOOK

- **Zetron Exclusive:** "DIGIT LOCK" for extended DTMF decoding range.
- **RS-232 Port:** lets system operator print out call detail information and easily program phone patch.
- **Internal 300/1200 Baud Modem:** allows remote programming on same phone line that is used by patch. Also allows factory service personnel to aid in servicing unit.
- **Upload/Download Capability:** allows system operator to safely store system programming information.
- **Multiple Phone Line Capability (2 to 16 lines):** allows customers to have their own dedicated phone line.
- **Voice Prompts:** instruct phone callers on how to use the system.
- **Selectable Pulse or Regenerated Dialing to Phone System**
- **Rings and Progress Tones:** with correct timing and sounds.
- **Privacy Mode:** allows mobile to talk to phone party without being monitored by other users on system.
- **Automatic Error Checking:** when transferring data to or from patch.
- **Internal Memory Buffer:** stores call detail information.
- **Unattended Auto Call Function:** allows page to be automatically sent when a special phone line is called.
- **Second Dial-Tone Disconnect:** prohibits toll restriction from being easily defeated.
- **Toll Restrictions & Calling Privileges:** on a per user basis.
- **Flexible Timers & Parameters:** allow the system to be fine tuned.
- **Superior Sounding Audio:** that will impress your customers.
- **Flexible Connect & Disconnect Sequences:** which can include variable length ANIs or fast ANI.
- **Simplex VOX, Digital Delay, and Sampling:** for optimum simplex capability.
- **CTCSS and DCS Signaling:** for duration of call or only during selective signaling or until mobile answers.
- **Multiple Call Limit Timers:** can be assigned on a per user basis.
- **Built-in Community Repeater Panel.**

Some features listed are optional. Consult factory for configuration information.

Zetron's Model 45 Z-PATCH Telephone Interconnect and Model 48 Repeater Manager



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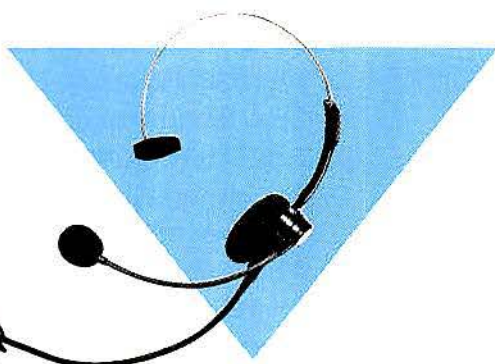
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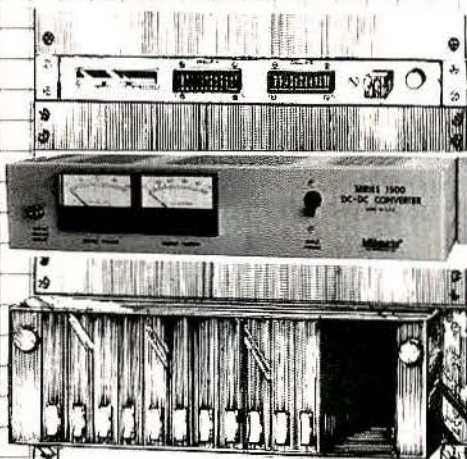
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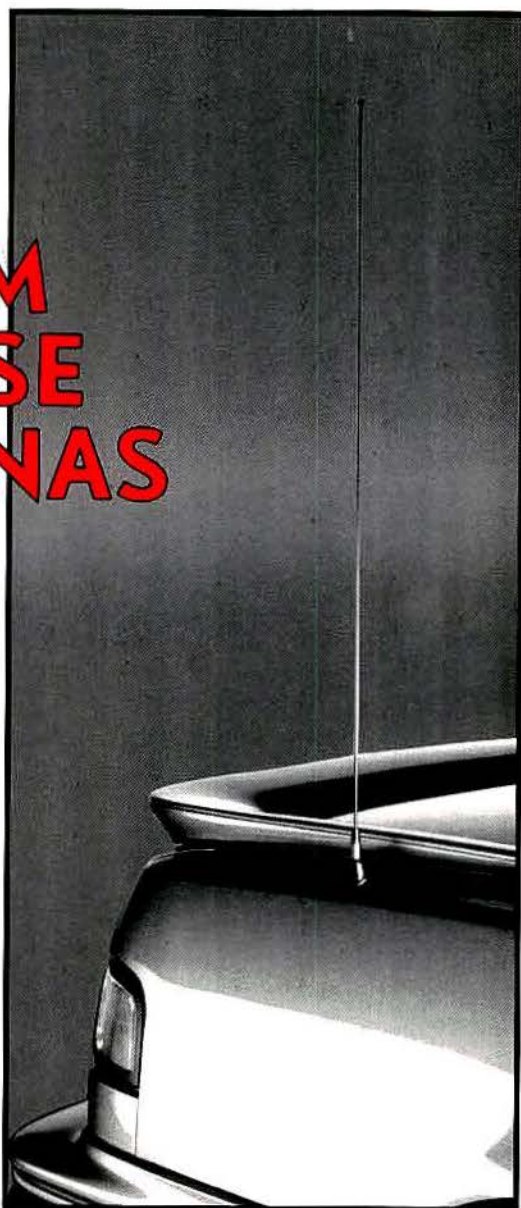
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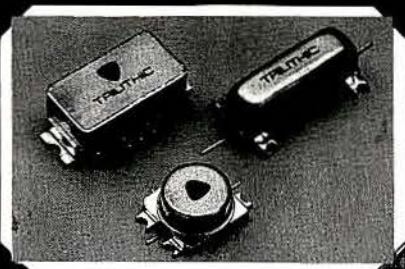
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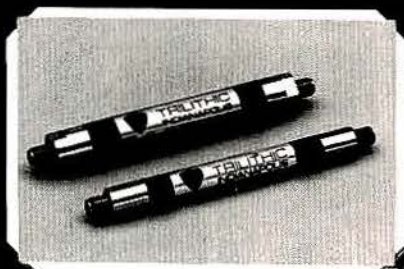
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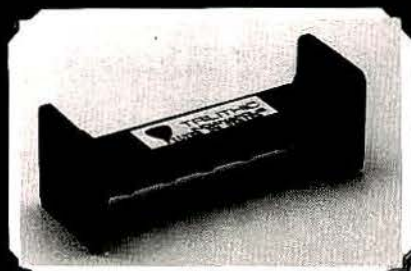
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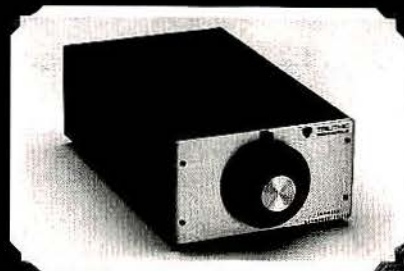
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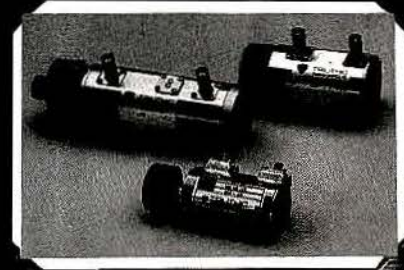
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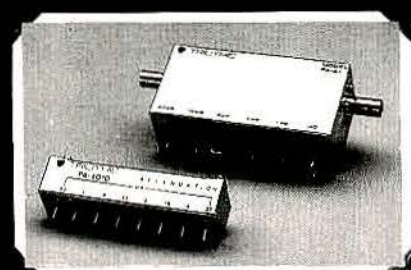
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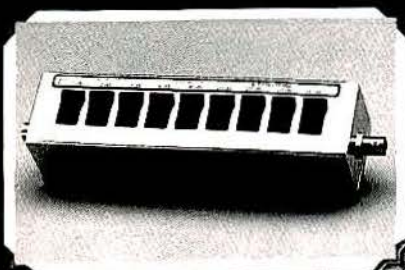
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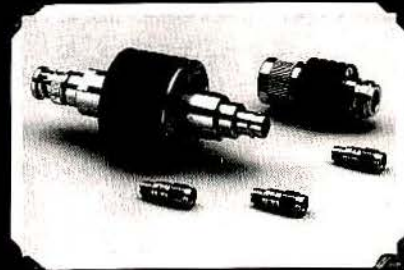
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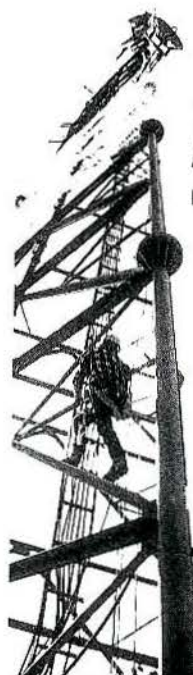
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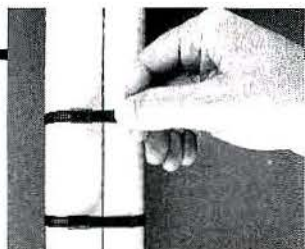
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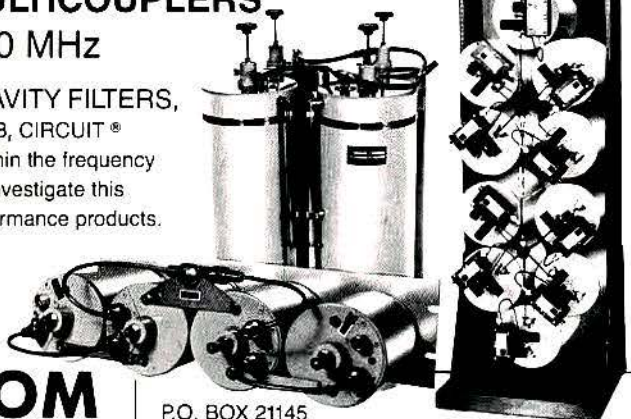
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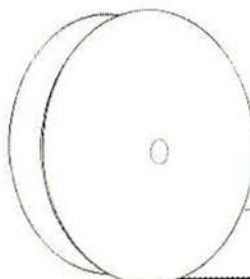
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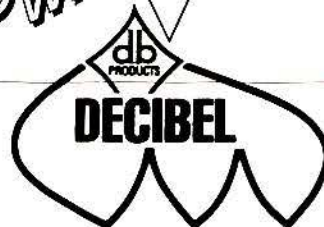
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Product Directory begins on page 16

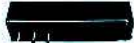


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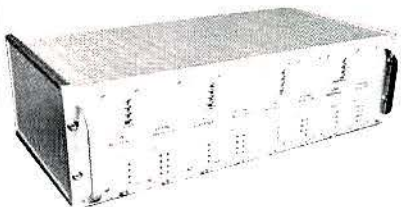
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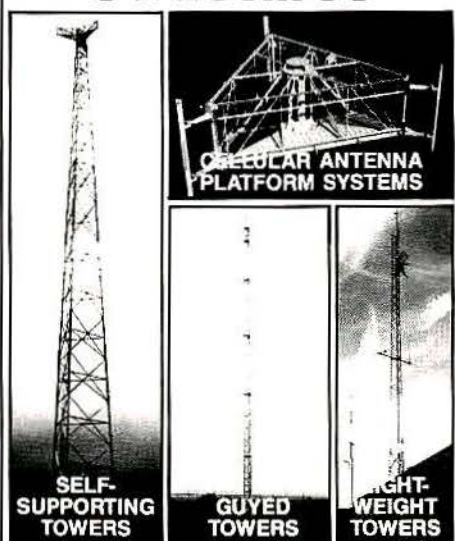
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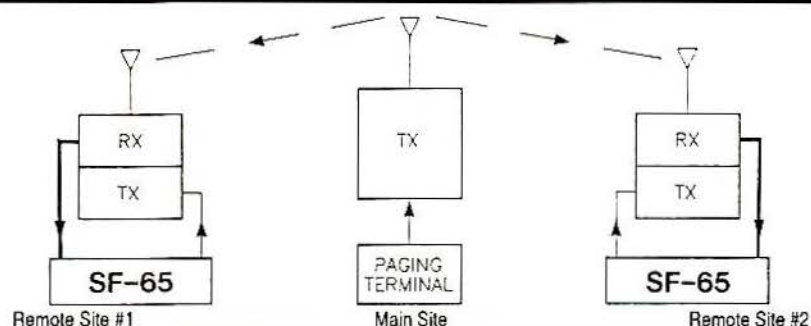
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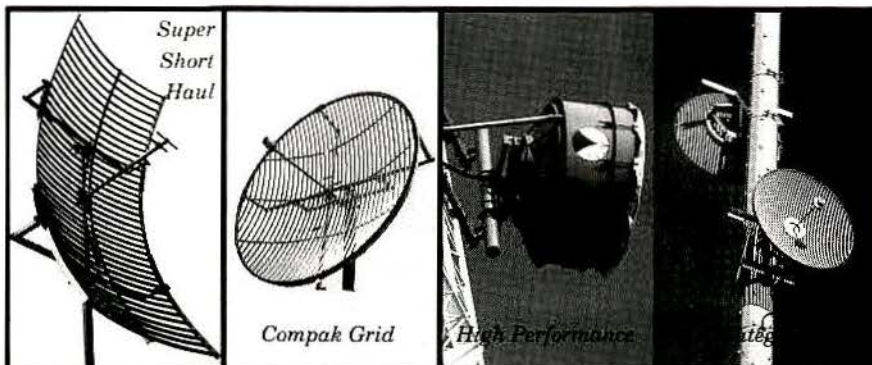
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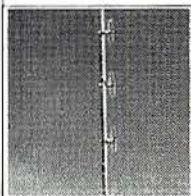
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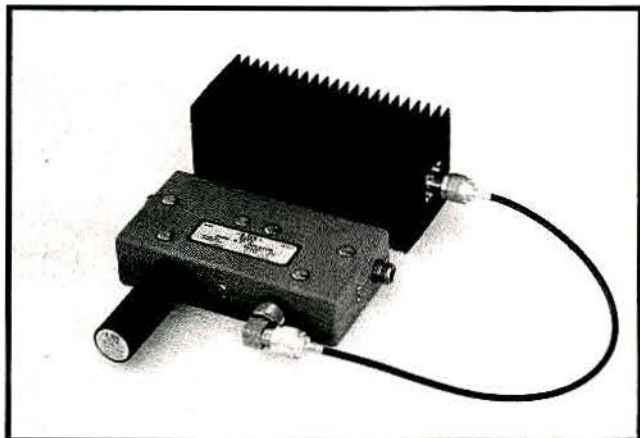
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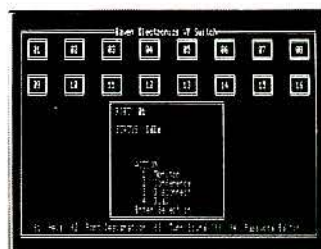
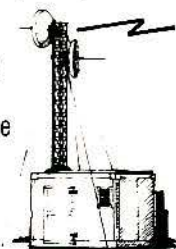
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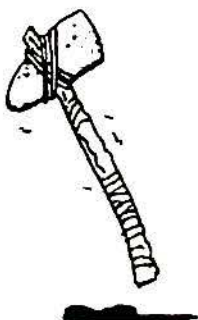
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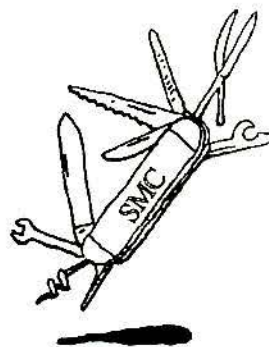


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D

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G-H

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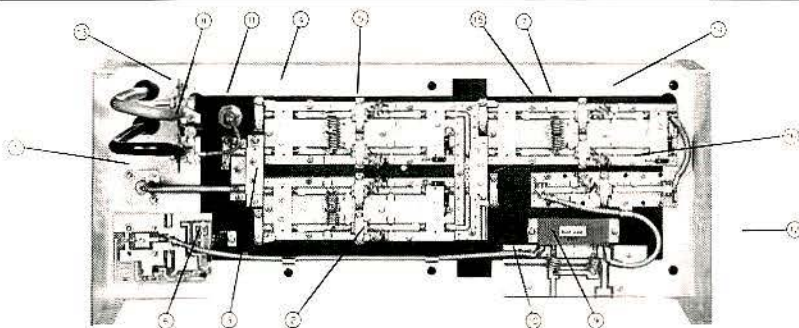
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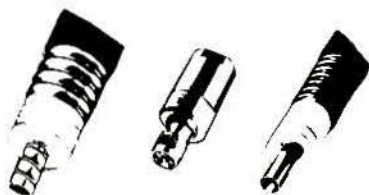
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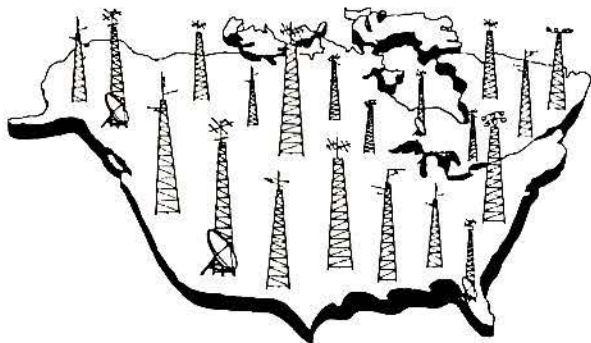
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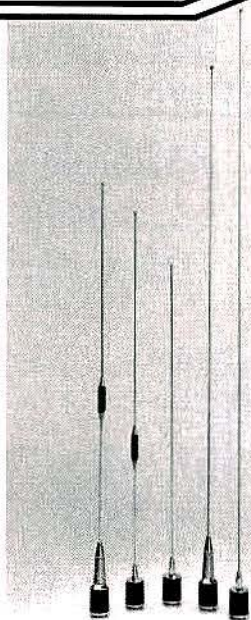
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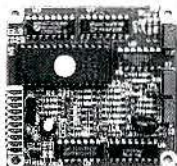
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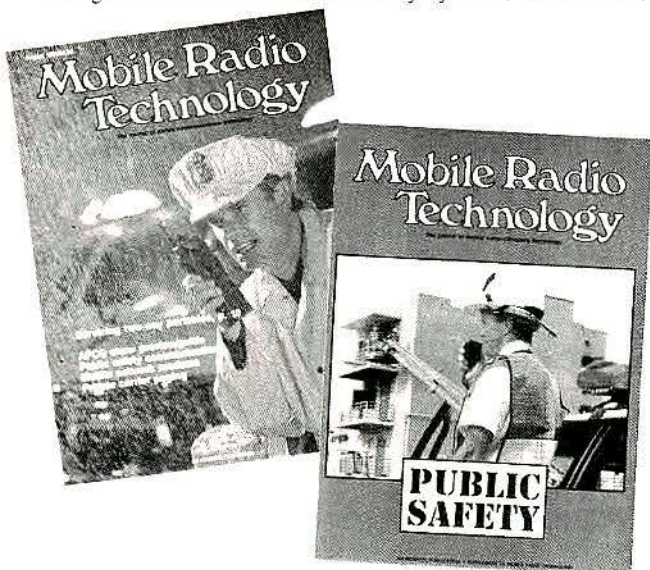
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M. Crooks, Broadcast Communications, August, page 26.
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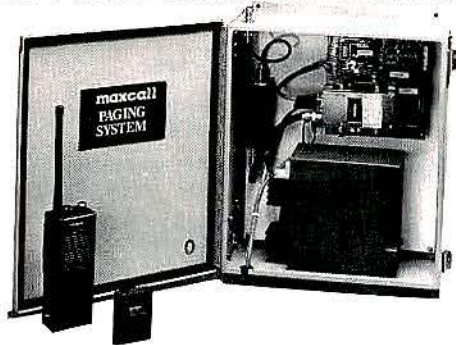
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Towers

"How To Specify and Monitor Your Tower Installation," *John W. Crooks*, Broadcast Communications Systems, March, page 24.
"Portable Tower Offers Swift Setup Capability," *John W. Hughes*, Rapid Deployment Towers, April, page 74.
"Set Your Sites a Little Lower," *Michael J. McCabe*, Glenayre Electronics, July, page 18.

Trade show coverage

"IMCE Show Preview/Guide," *staff report*, March, page 46.
"ENTELEC Sessions Detail Challenges in Radio Systems," *Jane Bryant*, staff editor, June, page 50.
"IMCE Wrap-Up/Review," *Don Bishop*, editorial director, and *Jane Bryant*, staff editor, June, page 56.
"APCO National Conference '91 Preview/Guide," *staff report*, August, page 44.
"IMCE/Fall Preshow Overview," *staff report*, September, page 68.
"Mobile Communications Marketplace Preshow Overview," *staff report*, October, page 60.

Trunked radio

"How To Trunk UHF Radio Systems," *Ed Johnson*, ETrunk Systems, June, page 10.
"ENTELEC Sessions Detail Challenges in Radio Systems," *Jane Bryant*, staff editor, June, page 50.



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Digital technology migrates into public safety sector

Digital radio is viewed as a spectrum relief answer for public safety communications users, and Associated Public-Safety Communications Officers (APCO) is in the process of reviewing standards for digital radio. Under the South Daytona Beach, FL-based group's Project 25, questions of interoperability and open architecture standards are being addressed. Systems testing is probably a year away or longer, according to industry experts.

Work on digital is progressing as FDMA has been selected by the Project 25 committee as the coding scheme. With the coding scheme mapped out, Motorola unveiled its Astro digital systems technology at APCO's annual show, Aug. 12-15 in Tulsa, OK.

The radio manufacturer based in Schaumburg, IL, only announced systems technology, not product.

The systems technology will enhance spectrum use, according to Dick Day,

vice president and general manager of Motorola's North America Group marketing division and a member of the APCO Project 25 committee.

"With spectrum management, we can pack more users in a closer metropolitan area," he said, "and get more reuse out of the frequencies and in general improve the spectrum efficiencies of the channels."

The coding scheme is a fundamental part of the decision, Day explained. "In the United States, we don't have virgin spectrum available to openly select an access method or coding scheme. Plus the public safety sector has billions of dollars in fixed equipment nationwide. The access method was the key issue and took the bulk of our discussions (the committee)," he said.

FDMA will give some temporary relief for crowded spectrum but will not be enough as public safety needs in the future grow to computer use, finger-



The Astro digital technology platform introduced by Motorola enables compatibility with existing Motorola analog conventional, Securenet digital and Smartnet trunked radio systems for public safety users.

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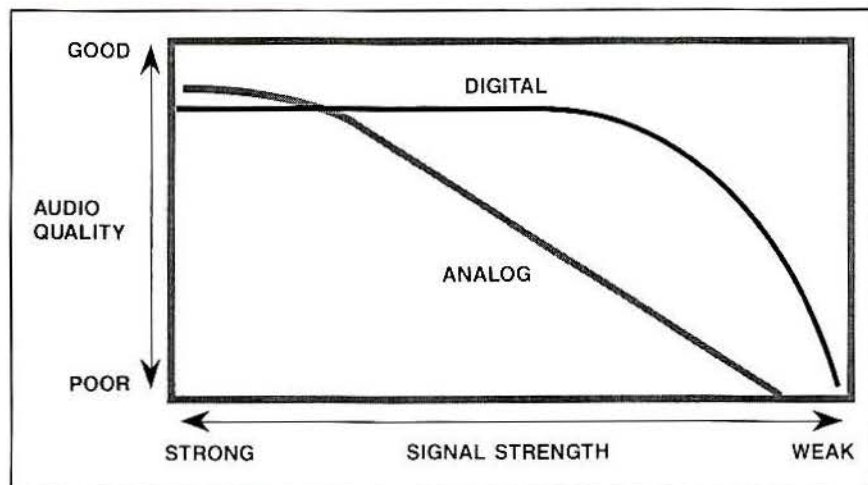
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Digital technology boasts superior audio quality vs. signal strength.

printing methods and other media, it is believed.

Motorola's intention is to have Astro adopted as the Project 25 standard, and the manufacturer has made that presentation to the APCO Project 25 committee continuously for the last two years, Day said.

"All of the work that has been done by the committee and approved to date by the steering committee has been adopted by the Astro team," Day said. "So, we had some different technology that we changed when APCO changed its plan."

"We have been flexible to modify our offering depending on the work of the APCO committee."

"We are not announcing any new radios at this show or this year—it's too premature for that," Day explained.

"But the fundamental nature of the radios will be digital format, so they will be different from the radios of the past but they will have so much more computer power than older radios."

Day said there exists some public safety concerns with communicating with various generations of radios, as well as interoperability. "Radios will be able to operate in all modes that radios of today do—the new generation of radios will have digital," he said. "We've been working with the Project 25 committee so interoperability will be feasible."

A decision was not accepted on a systems standard at the conference. "Trials are scheduled for the fall, and all the manufacturers will be participating in them," he said.

APCO targets training, frequency coordination

The incoming command of the Associated Public-Safety Communications Officers plans to concentrate on the APCO Institute, training programs and frequency coordination. Goals of Ronnie Rand, president of the South Daytona Beach, FL-based group, include:

□ "To survive is my first goal. I'd like to come out of this year alive."

□ "I want to see the APCO Institute turn around."

□ "On the frequency coordination side, continuing developing our in-house system is on the very top of my priority list."

□ "Better training programs and provide all the services to our members that we currently provide."

Rand said programs in the APCO Institute have been encouraging, and he hopes for it to continue to develop, as well as other APCO programs.

"Basically, I feel like this past year under Sam's (Gargaro) leadership we've made some of the greatest strides that APCO ever made," he said at a "meet the board" session during the group's annual conference Aug. 12-15 in Tulsa, OK.

"We put into motion some programs that in part I believe will evolve in time, and I am going to try to continue those programs to the best of my ability," he said. "I don't have anything earth-shattering, but I think we are headed in a very good direction, and I want to

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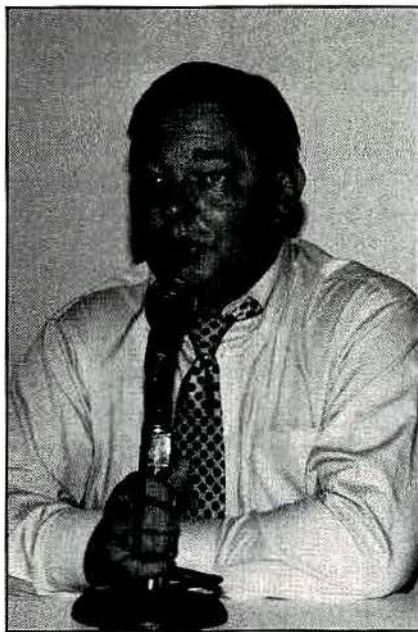
maintain the momentum there."

Fielding the questions

Asked about personal communications service (PCS) and the impact on 911, outgoing president Sam Gargaro said: "PCS has a direct impact on 911. Our 911 committee is going to be active in that industry."

Gargaro cautioned that APCO will work with PCS companies as long as they do not interfere with public safety. "We need to protect our interests," he said. "We will work with them as long as it does not harm us and allows us to continue to function in that spectrum."

APCO Project 25 also was of interest to members. According to Gargaro, "Basically what we are trying to accomplish with the digital standard is an open architecture. We have accepted FDMA as the scheme modulation. And we're looking to make a vocoder selection in



Ronnie Rand: 'To survive is my first goal.'

the near future."

Vendor contenders for the vocoder include GE Ericsson, E. F. Johnson, Motorola, Standard and Teletec.

"We hope to have major issues on Project 25 resolved in six months," Gargaro said.

Asked about a salary survey, Bob Tall, executive director, said APCO is possibly going to send out a survey to see "who are members are, but whether this will include salary information is not known at this time."

Teletec adds MDT to Omni accessory line

Teletec, Raleigh, NC, has added Kustom Electronic's DXT mobile data terminal to its accessory line for Omni mobile radios. The DXT interfaces the Omni line's control unit directly.



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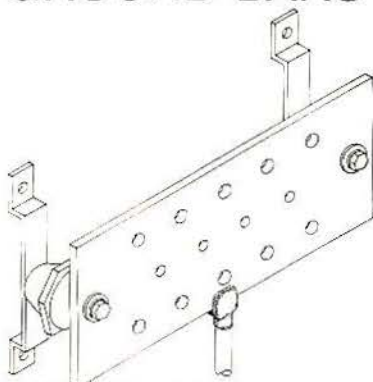


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'Mixed commission' resolves U.S., Mexican co-channel matters

U.S. and Mexican agencies form a mixed commission that meets periodically to coordinate mutual radio spectrum use near the international border. The FCC and its Mexican counterpart always are represented at the meetings, which sometimes include representatives of the FCC Private Radio Bureau,

the National Telecommunications and Information Administration, the Federal Bureau of Investigation and the Immigration and Naturalization Service, among others. The meetings are held in various U.S. and Mexican cities.

Because treaties between the United States and Mexico do not fully specify

how to coordinate radio spectrum in border areas, the mixed commission and southern FCC field offices become involved.

In San Diego, for example, the FCC field office routinely communicates with its counterpart in Tijuana, Baja California, to resolve interference complaints. "Mexico is an emerging country," said FCC electronics engineer Jerry Man during an interview at the San Diego office. "The country is moving rapidly into communications."

Man said the mixed commission handles many cases involving problems with co-channel usage, interference and unlicensed operation, and his office participates in cases in its area.

If a U.S. licensee complains to the San Diego office about a signal coming from Mexico, the first step an FCC staff member takes is to look up the pertinent frequency in a book published by the International Frequency Registration Board (IFRB), a part of the International Telecommunications Union (ITU). The United States and Mexico are ITU members. Man described the IFRB publication as an attempt at frequency coordination.

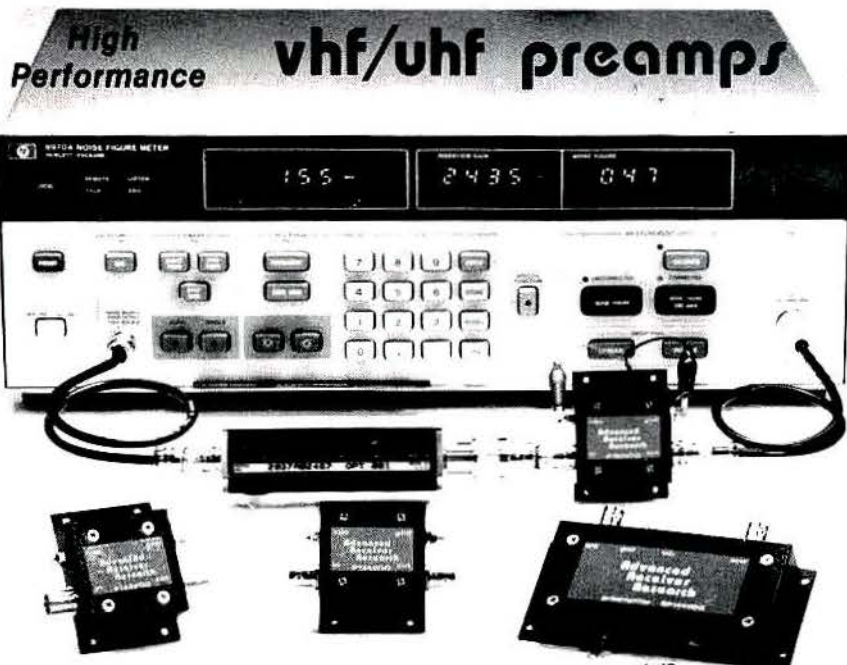
"The book indicates prior use of the frequency. If a station is unlicensed, it does not appear in this publication," Man said.

June Butler, a public affairs specialist in the FCC San Diego office, added: "If it is the Mexican station that is unlicensed, the problem usually is resolved in favor of the U.S. licensee" when the office's engineer-in-charge asks his counterpart in Tijuana for assistance.

"The unlicensed station usually leaves the air quickly," Butler said.

Coordination may change for 450-470MHz frequencies

The FCC has proposed changing the frequency coordination requirements for secondary fixed use of frequencies in the 450MHz-to-470MHz band. Specifically, it suggested that secondary fixed operations should require coordination only by the certified coordinator for the radio service in which the applicant is eligible for licensing.



Receive only	Freq. Ranges (MHz)	N.F. (dB)	Gain (dB)	Comp. (dBm)	Device Type	Price
P30VD, P35VD, P40VD, P45VD	30-35, 35-40, 40-45, 45-50	<1.3	15	0	DGFET	\$ 44.95
P30VDG, P35VDG, P40VDG, P45VDG	30-35, 35-40, 40-45, 45-50	<0.5	26	+12	GaAsFET	\$109.95
P150VD, P160VD, P170VD	150-160, 160-170, 170-180	<1.5	15	0	DGFET	\$ 44.95
P150VDA, P160VDA, P170VDA	150-160, 160-170, 170-180	<1.1	15	0	DGFET	\$ 56.95
P150VDG, P160VDG, P170VDG	150-160, 160-170, 170-180	<0.5	24	+12	GaAsFET	\$109.95
P450VD, P460VD	450-460, 460-470	<1.8	15	-20	Bipolar	\$ 49.95
P450VDA, P460VDA	450-460, 460-470	<1.2	16	-20	Bipolar	\$ 74.95
P450VDG, P460VDG	450-460, 460-470	<0.5	16	+12	GaAsFET	\$109.95
P800VDG, P830VDG, P860VDG	800-830, 830-860, 860-890	<0.6	19	+12	GaAsFET	\$119.95
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SP30VDG, SP35VDG, SP40VDG, SP45VDG	30-35, 35-40, 40-45, 45-50	<0.55	26	+12	GaAsFET	\$139.95
SP150VD, SP160VD, SP170VD	150-160, 160-170, 170-180	<1.6	15	0	DGFET	\$ 74.95
SP150VDA, SP160VDA, SP170VDA	150-160, 160-170, 170-180	<1.2	15	0	DGFET	\$ 86.95
SP150VDG, SP160VDG, SP170VDG	150-160, 160-170, 170-180	<0.55	24	+12	GaAsFET	\$139.95
SP450VD, SP460VD	450-460, 460-470	<1.9	15	-20	Bipolar	\$ 79.95
SP450VDA, SP460VDA	450-460, 460-470	<1.3	16	-20	Bipolar	\$104.95
SP450VDG, SP460VDG	450-460, 460-470	<0.55	16	+12	GaAsFET	\$139.95

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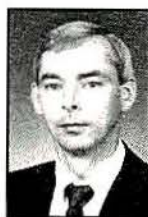
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Michael Berry leaves the mobile communications division of Wavetek, Indianapolis, as land mobile and cellular equipment sales manager to join Mobile Mark, Schiller Park, IL, as technical sales manager.

Appointments at Bendix/King Mobile Communications, Lawrence, KS:

Neil Quellhorst advances from engineering group leader to manager of engineering.

Gene Tyner advances from manufacturing supervisor to market planner.

Dorinda Carlson moves up from sales administrator to manager of marketing administration.

Jeff Good exits Aerotron, Raleigh, NC, as director of

international sales to join Bendix/King as international sales manager.

Kristine Brinegar leaves Kustom Electronics, Overland Park, KS, as bids and proposals supervisor to become administrator of bids and contracts for Bendix/King.

Mindy Myers, a recent graduate from Kansas State University, Manhattan, KS, joins Tekk, Kansas City, MO, as marketing assistant for the land mobile radio division.

Jack Batchie leaves Coded Communications, Carlsbad, CA, as customer and field support manager to join Cimarron Technologies, Escondido, CA, as national sales manager.

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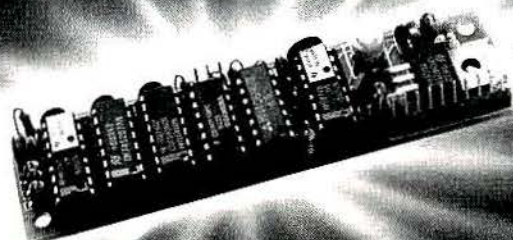
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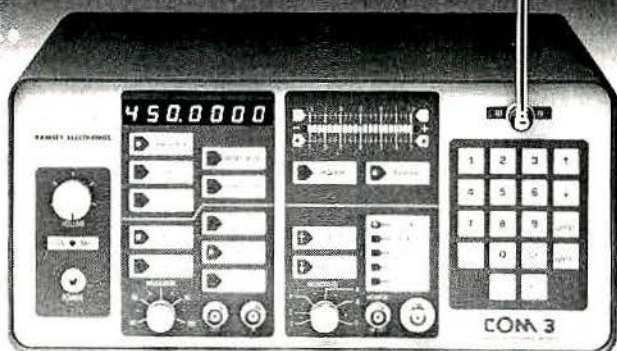
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7-13—**Cellular Telecommunications Industry Association 1992 Winter Meeting and Exposition**, New Orleans. Contact: 202-785-0081.

18-20—**International Mobile Communications Expo/Spring**, Las Vegas Convention Center, Las Vegas. Contact: 303-220-0600.

March

29-April 1—**Energy Telecommunications and Electrical Association '92**, Dallas Convention Center, Dallas. Contact: 214-235-0655.

April

12-15—**North Central Regional Conference Associated Public-Safety Communications Officers Meeting**, Pheasant Run Resort and Convention Center, St. Charles, IL. Contact: T.G. Mieure, 708-244-8640.

May

7-9—**1992 Annual Mobile Communications Conference**, Westin ANA Hotel and Resort, Washington, DC. Contact: National Association of Business and Educational Radio, 800-759-0300.

11-13—**Vehicular Technology Conference**, sponsored by IEEE Vehicular Technology Society, Hyatt Regency, Denver. Contact: John Tary, 303-452-6111, ext. 443.

13-15—**Radiocomm Annual Convention**, Montreal. Contact: Lisa La Prairie, 613-233-4888.

17-20—**East Coast Regional Conference Associated Public-Safety Communications Officers Meeting**, Lancaster Host Resort, Lancaster, PA. Contact: James Giannini, 215-631-6500.

June

21-25—**Utilities Telecommunications Council 44th Annual Meeting**, Hyatt Civic Plaza, Phoenix. Contact: Rita Clark, 301-621-7802.

July

19-23—**Forestry-Conservation Communications Association**, Toledo, OH. Contact: Don Pfohl, 602-644-3166.

August

9-14—**Associated Public-Safety Communications Officers 58th National Conference**, Washington State Convention Center, Seattle. Contact: 800-824-1850.

September

1-3—**International Mobile Communications Expo/Fall**, Georgia World Congress Center, Atlanta. Contact: 303-220-0600.

21-25—**Mobile Communications Marketplace**, Moscone Center, San Francisco. Contact: Telocator, 800-326-8638.

October

8-10—**Special Industrial Radio Service Association Annual Meeting**, Grove Park Inn, Asheville, NC. Contact: Barbara J. Levermann, 703-528-5115.

24-29—**International Association of Chiefs of Police 98th Annual Conference**, Detroit and Windsor, Ontario. Contact: 703-243-6500.

November

20—**Radio Club of America Annual Meeting and Awards Banquet**, New York Athletic Club, New York. Contact: 201-246-7271.





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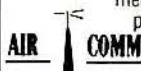
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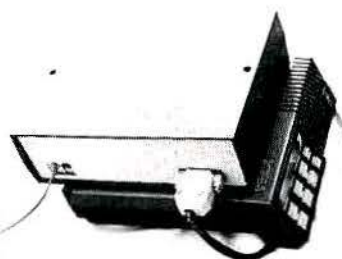
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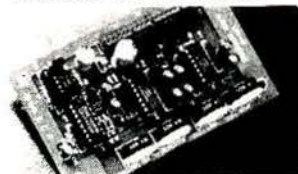
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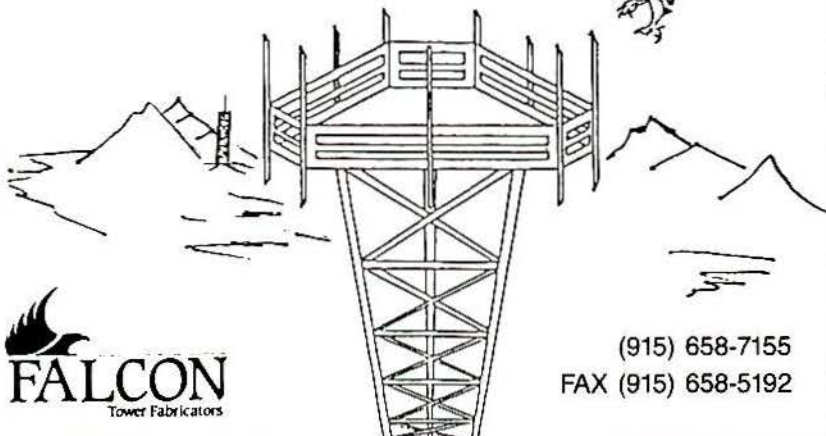
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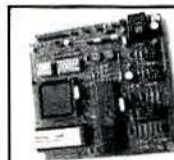
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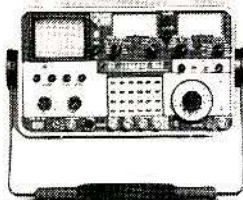
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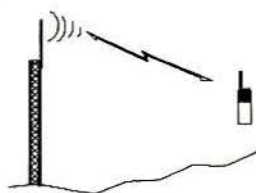
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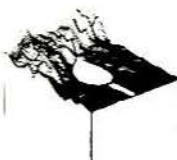
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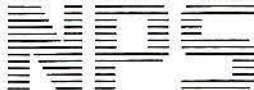
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- Uses crystal controlled CMOS microprocessor for low voltage operation
- Three pole high pass filter included to remove tone from received audio
- All connections made with microminiature plug and socket with color coded wires attached
- Double sided tape supplied for quick mounting
- All industry standard digital codes are field programmable with simple PCB jumpers
- All 512 octal codes can be programmed
- Simple field programming of both transmit and receive data polarity
- Operates over full temperature range of -30°C to +65°C
- Easy hookup with external diodes for multi-code encode or decode
- Powered by a very low voltage of 6vdc to 20vdc @ 8ma.
- Full one year warranty when returned to the factory for repair
- Immediate one day delivery

Decode

- Sensitivity better than 15mv
- A signal to noise ratio of better than 4db Sinad reliably operates decoder
- Decode time is 171ms (one word length)
- Decode input Z is 60k, AC coupled, for easy discriminator hookup
- Open collector transistor muting can be programmed for ground to enable or ground to mute
- Automatic hookswitch monitoring when mike is removed from hanger
- Automatic squelch tail elimination by turn off code detection

Encode

- Golay 23 bit digital word sent at 134.4 Hz data rate
- Turn off code of 134.4 Hz sine wave for 180ms sent to eliminate receiver squelch tail
- Output Z is 2.2k, AC coupled, and adjustable from 0-3v
- Open collector high current transistor for P.T.T. keying
- Test code to set transmitter modulation level included

\$59.⁹⁵ each

 **COMMUNICATIONS SPECIALISTS, INC.**
426 West Taft Avenue • Orange, CA 92665-4296
Local (714) 998-3021 • FAX (714) 974-3420
Entire U.S.A. 1-800-854-0547

